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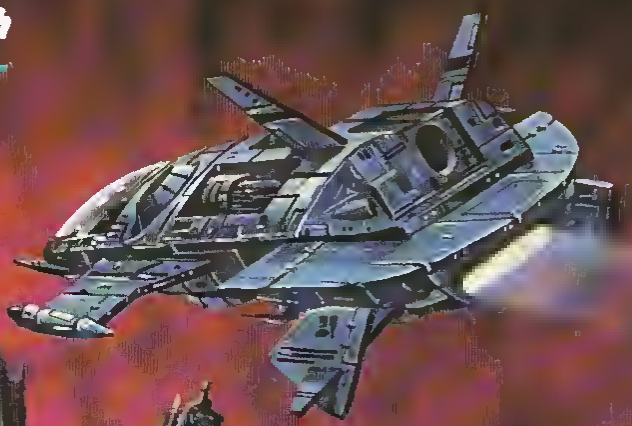
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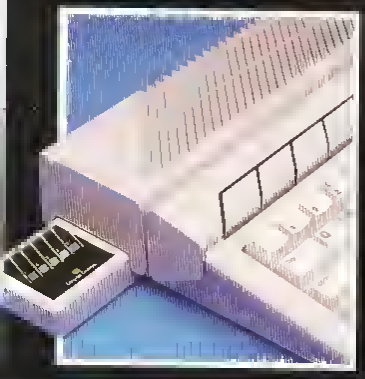




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ST User magazine

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/F/A/S/T/B/

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Example disc
This includes a range of demo programs including one using GEM with sizeable windows, pull down menus etc. The disc also includes a speech synthesizer machine code module that, when loaded, allows Fast BASIC programs to speak.

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The following table compares some of the features of FAST BASIC and the German produced GFA Basic.

Feature	GFA Basic	Fast BASIC
Amount of RAM occupied by interpreter	55K	None
Size of BASIC interpreter	55K	128K
Multiple programs at once	✗	✓
Supports GEM desk accessories	✗	✓
Built in 68000 assembler	✗	✓
Start up time	10 sec	Instant
Manual	300 page	400 page
Quick reference card	✗	✓
GEM examples	✗	✓
Speech synthesizer	✗	✓
Maths precision (No. of digits)	11	7 or 15
Integer size	16 bits	8 16 or 32 bits
GEM based editor	✗	✓
Mouse controlled cut/copy/paste	✗	✓
Variable tracking	✗	✓
Program cursor tracking	✗	✓
Number of keywords	220	390
Named multi-line functions	✗	✓
CASE/SWITCH construct	✗	✓
Package includes	1 disc Manual	2 discs Manual Quick ref card ROM cartridge

Run-time disc
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LIBRARY CHANGES

Many people have requested changes to the donation scheme in the eight bit library, and I am pleased to announce that from this issue these changes have been implemented All club members will be able to send for as many programs as they wish, at any time they wish, within the rules of the donation scheme See the library page in this issue for the full rules The '3 for 1' exchange scheme is still in force and the £10 bonus award is still operative.

Opening up the library in this way will obviously help to finance the running of the club, and in addition it will mean that members won't feel so restricted in what they can get from the club Of course, it will probably mean a slightly longer wait for return of programs but I'm sure you will bear with us on that one.

ST LIBRARY

In the next issue, it is hoped that an ST library system will be started Mike Stringer will be the librarian, but he informs me that he is pretty short of programs for it at the moment If any of you out there would like to help give the library a start, please send disks to the club address, marked for Mike's attention, in single sided half-meg format. The actual format of the library system hasn't been decided yet, if you have any suggestions or observations on this, please let us know The library will be for public domain programs only (i e. no 'ripped off' commercial programs)

HAMMERSMITH AGAIN

The next Atari computer show will once again be at the Novotel in Hammersmith at the end of April We will be having a stand, as we did at the Xmas show, and would like as many members as possible to come along and meet us We were very pleased to meet many of you at the last show and are looking forward to seeing you again

The point of being at the show is to try to gain new members for the club At the last show we got 157 new members, as well as selling over 600 copies of Monitor at this show we hope to do even better So bring a friend to stand 81 and make him sign on the dotted line!

CREDITS

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CRACKING THE CODE

by Keith Mayhew Part Eleven

Player/missile priorities and the special GTIA modes are discussed this time, followed by a look at how display list interrupts are used and why they are useful.

Player/missile Priorities

As mentioned last time, the register PRIOR has four bits which determine how players and their missiles are diplayed. To select a particular priority scheme one of these four bits should be set; the priorities for these are shown in Figure 1

For example, if bit 1 was set in PRIOR then from Figure 1 we can see that player/missiles 0 and 1 will always appear over all playfield colours and that player/missiles 2 and 3 will disappear behind all playfield colours and will only show above the background colour

No matter which priority has been selected if any two player/missiles overlap then the one with the lower number will be displayed i e be on top, assuming of course that bit 5 hasn't been set in PRIOR to enable a third colour in the overlap region. The playfield colours obviously cannot overlap so their respective priorities is of no consequence unless a fifth player has been created out of the four missiles In this case the fifth player, referred to as P5 in Figure 1, takes the colour of playfield 3 (COLPF3 not COLPF0 3 as stated last time - sorry!) The fifth player can be placed to coincide with other playfield colours and in these cases it will always disappear behind them Figure 1 also shows that everything will appear over the background

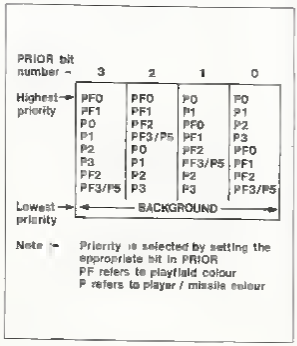


Figure 1.

If more than one priority is selected then both priorities will be obeyed when they agree, however, if one says that the object should be on the top and the other says it should be under, the overlap region will turn black no matter what colours are selected. Having all four priority bits set to zero is something which I have never seen documented, but it does have an interesting effect It seems to act as if bits 1 and 3 in PRIOR had been set but the conflict regions don't turn black but take the colour obtained by ORing the two overlapping colours together If you are not sure about these priorities then the best thing is to set up some players on the screen and experiment

Colours and Shades

To recap, there are a total of nine colour registers in the hardware, they are COLPM0 3 for player/missiles, COLPF0 3 for playfields, and COLBK for the background Their respective shadows are PCOLR0 3, COLOR0 3 and COLOR 4

All of these registers use their top four bits to specify one of sixteen colours and their lower four bits to specify a luminance Bit 0 of the luminance is not actually used so there are only eight luminances available

The association of the playfield and background colours to the data being displayed by ANTIC will now be described, with the exception of the character mapped modes which will be dealt with next time

The background colour, COLBK, is always visible wherever ANTIC is not displaying a mode line, usually at the left and right edges of the screen and at the bottom The background colour will also always be displayed during 'blank' instructions in a display list. for example at the top border. This rule applies for all ANTIC modes

Of ANTIC's eight bit mapped modes, modes 8 through $E all display the background colour if the pixel being displayed is 0 If the pixel is 1 then it uses COLPF0 if it is 2 then COLPF1 and if it is 3 then COLPF2 is used The pixel's value refers to either a one or two bit field depending on whether a two or four colour mode is being used

In mode $F, GRAPHICS 8 from BASIC, the register COLPF2 is used wherever the pixel value is 0 producing a new 'background' with COLBK showing as a border When the pixel value is 1 the colour is still specified by COLPF2 but the luminance value comes from COLPF1 If players are displayed in this mode then their priorities only refer to COLPF2 However, when the player does appear on top of COLPF2 then if the pixel value is 1 the data is still shown 'through' the player using the player's colour and COLPF1's luminance! This strange set up is used in two of the character modes as we will see next time

GTIA Modes

The top two bits of PRIOR determine how GTIA displays the data given to it by ANTIC Both bits set to zero provides the normal mapping of colours to data, we shall now consider the other three modes available Although these modes can be used with any ANTIC mode the effects are rarely useful the following descriptions will assume that ANTIC mode $F is being used. This will use four bits for each pixel producing 80 pixels across a standard screen

With bit 7 set to 0 and bit 6 set to 1 there are sixteen luminances available of the background colour, COLBK, assuming that its luminance has been set to zero The pixel value determines the actual luminance.This mode is used for BASIC's GRAPHICS 9

With bit 7 set to 1 and bit 6 set to 0 there are nine independent colours available. The background colour for this mode comes from COLPM0, i e. pixel value 0 As the pixel value increases, the registers used are, in order COLPM1 3, COLPF0-3 and COLBK. Higher pixel values re use some of these registers This mode is used for BASIC's GRAPHICS 10

With bits 7 and 6 set to 1 there are sixteen colours of one luminance The colour is determined by the pixel value and the luminance is taken from COLBK The background colour, COLBK, is always displayed at luminance level zero This mode is used for BASIC's GRAPHICS 11



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Interrupts

Interrupts are generated by the hardware of the ATARI and can cause the 6502 to execute an interrupt routine When the routine finishes the code being executed by the 6502 continues as before An interrupt is therefore very similar to a subroutine except that it can be called at any time independent of the code being executed

There are three different types of interrupt on the 6502, they are Interrupt request or IRQ, non maskable interrupt or NMI and a 'software' interrupt.

An IRQ will only be acted upon by the 6502 if its 'I' flag has been cleared by the CLI instruction An NMI will always be acted upon because it cannot be masked like an IRQ, hence its name. A BRK instruction when executed acts like an interrupt, hence it is termed a software interrupt

All interrupts save the processor state on the stack before the interrupt routine is started Exit from the routine is performed with the RTI instruction which pulls the processor state back and returns to the place it was at just before the interrupt occurred

The program in Listing 1 is used to modify the display list of one of BASIC's GRAPHICS 9, 10 or 11 modes It replaces six of the mode $F lines with mode 2 lines and then moves the jump on vertical blank instruction so that it occurs 42 instructions earlier than it used to The reason for this is that the screen had been extended by the mode 2 lines which create eight scan lines each, if the display had not been shortened then the screen would have started to roll Before making the changes to the display list ANTIC's DMA is disabled so that it does not try to execute the display list while it is being changed, the display list DMA is turned on again when all the changes have been made If this method had not been used then the screen would have become unstable for a short while

The only problem is that inserting

```
0100 ;Hardware registers...
0110 PAICR   =      $D01B   ;Priority and GTIA mode.
0120 DMACTL  =      $D400   ;DMA control.
0130 WSYNC   =      $D40A   ;Wait for horizontal sync.
0140 NMIEN   =      $D40E   ;NMI enable.
0150 ;Operating system vectors...
0160 VDSLST  =      $0200   ;DLI vector.
0170 SETVBV  =      $E45C   ;Set vertical blank vector.
0180 VBI2    =      $E45F   ;Stage two vertical blank.
0190 ;Operating system shadows...
0200 SDMCTL  =      $022F   ;DMA control.
0210 SDLSTL  =      $0230   ;Display list pointer low.
0220 SDLSTH  =      $0231   ;Display list pointer high.
0230 GPRIOR  =      $026F   ;Priority and GTIA mode.
0240 ;Display list instructions...
0250 JMP     =      $01     ;Jump instruction.
0260 RVB     =      $40     ;Wait for vertical blank flag.
0270 DLI     =      $80     ;DLI flag.
0280 ;Page zero variables...
0290         *=     $CB
0300 PZERO   *=     *+2     ;Used as a pointer.
0310 COUNT   *=     *+1     ;DLI count.
0320         *=     $0600
0330         PLA
0340         LDY    #VBI&$FF ;Set VBI vector.
0350         LDX    #VBI/256
0360         LDA    #6
0370         JSR    SETVBV
0380         LDA    #DLICODE&$FF ;Save new DLI vector.
0390         STA    VDSLST
0400         LDA    #DLICODE/256
0410         STA    VDSLST+1
0420         LDA    #0      ;Zero DLI count.
0430         STA    COUNT
0440         LDA    SDMCTL  ;Turn off ANTIC DMA for
0450         AND    #$DF    ; display list.
0460         STA    SDMCTL
0470         STA    DMACTL
0480         LDA    SDLSTL  ;Copy display list pointer.
0490         STA    PZERO
0500         LDA    SDLSTH
0510         STA    PZERO+1
0520         LDY    #22     ;Position in display list.
0530         LDA    #$F+DLI ;Turn on interrupt.
0540         STA    (PZERO),Y
0550         LDA    #2      ;Mode 2 line.
0560 LOOP1   INY
0570         STA    (PZERO),Y ;Save in next position.
0580         CPY    #27     ;Five lines stored?
0590         BNE    LOOP1   ;No, loop back.
0600         INY            ;Next position.
0610         LDA    #2+DLI  ;Mode 2 + interrupt.
0620         STA    (PZERO),Y
0630         LDY    #157    ;New position in display list.
0640         LDA    #JMP+#VB ;Jump on blank instruction.
0650         STA    (PZERO),Y
0660         INY            ;Now copy display list
0670         LDA    PZERO   ; pointer as jump address.
0680         STA    (PZERO),Y
0690         INY
0700         LDA    PZERO+1
0710         STA    (PZERO),Y
0720         LDA    SDMCTL  ;Restore ANTIC DMA for
0730         ORA    #$20    ; display list.
0740         STA    SDMCTL
0750         LDA    #$C0    ;Enable interrupts.
0760         STA    NMIEN
0770         RTS            ;Return to BASIC.
0780 ;Vertical blank interrupt...
0790 VBI     LDA    #0      ;Zero DLI count.
0800         STA    COUNT
0810         JMP    VBI2    ;Exit to O.S.
0820 ;Display list interrupt.
0830 DLICODE PHA            ;Save accumulator.
0840         LDA    COUNT   ;Get DLI count.
0850         BNE    DR      ;Not zero, turn on GTIA mode.
0860         LDA    GPRIOR  ;Turn off GTIA mode.
0870         AND    #$3F
0880         STA    WSYNC   ;Wait for sync.
0890         STA    PRIOR   ;Save new mode.
0900         JMP    DLIEND  ;Exit.
0910 DR      LDA    GPRIOR  ;Restore old value.
0920         STA    WSYNC   ;Wait for sync.
0930         STA    PAICR   ;Save value.
0940 DLIEND  INC    COUNT   ;Increment counter.
0950         PLA            ;Restore accumulator.
0960         RTI            ;Return from interrupt.
```

Listing 1.

the mode 2 lines with one of the special GTIA modes on means that the text will not be displayed as normal. The solution is to set the display list interrupt flag in two places in the display list. The first is on the last mode $F line before the mode 2 lines and also on the last mode 2 line. With these flags inserted in the display list two NMI's will be generated during every scan of the picture. All that is needed now is to turn off the GTIA mode on the first interrupt and restore whatever mode was in use on the second interrupt.

The address of the interrupt routine, called DLICODE in Listing 1, is saved into VDSLST and VDSLST+1. The interrupts don't actually occur though until $C0 is saved into NMIEN after the display list has been set up. This value enables both vertical blank and display list interrupts (VBI and DLI respectively). A vertical blank interrupt is set up in the program to set the value of COUNT to zero at the start of each scan of the picture. This is used so that the DLI can differentiate between the first and second interrupt down the screen.

The very first thing the DLI routine does is to save the accumulator value on the stack so that it can be restored at the end. This is necessary otherwise it would affect the code it had interrupted.

If the value of COUNT is zero then it is the first interrupt and it loads the value of GPRIOR and masks off the GTIA bits before storing them in the hardware register. Before returning it increments the value of COUNT so that on the next interrupt it will load the value of GPRIOR and save it back in PRIOR hence turning the GTIA mode back on. The value of COUNT will be reset to zero at the next vertical blank so that the DLI continues to behave correctly.

It is important to remember that the hardware register itself is changed by the DLI so that it takes immediate effect. Even if the value of the register is not restored to its previous value then the next vertical blank will ensure that the value in the shadow is transferred to it. This is why that, when ANTIC's DMA is being turned off, the value is stored in both the shadow and the hardware register on lines 460 and 470.

What has not been explained so far is why their are write instructions to the register WSYNC on lines 880 and 920 in the DLI code. After a write to WSYNC the 6502 is halted until the current line has finished being displayed, this is known as horizontal synchronisation or blanking. If this was not done then the change to PRIOR might take place somewhere in the middle of the line, writing to WSYNC ensures the following instructions take place while the beam is returning for the next line analagous to the vertical blank.

A problem which might be encountered with DLI's is when using them with the operating system key click routine, as this uses WSYNC to generate a delay. The problem is that while the click is being produced the DLI might be delayed by a line due to WSYNC freezing the 6502 when the interrupt occurs. Usually the best thing to do is not to use the O.S. keyboard routines, otherwise you can generate your DLI a line earlier and use the register VCOUNT to determine when you have reached the desired line. VCOUNT keeps a track of the current scan line number to two line resolution, i.e. it counts only even scan lines as the least significant bit is missing.

If you write a program which depends on timing for correct operation then you can inspect the register PAL which bits 3, 2 and 1 set to 0 for a PAL machine and to 1 for an NTSC machine. PAL is the European video standard which runs at 50Hz while NTSC, the American standard, runs at 60Hz. In fact it is not just the display which runs faster on an NTSC machine the processor also runs faster.

Listing 2 is a BASIC program which loads the machine code of Listing 1 into memory and runs it on a GRAPHICS 9 screen.

We will continue next time with a study of character mapped modes and horizontal and vertical scrolling. In the meantime you might like to put DLI to good use for things such as changing colours of playfields or players somewhere down the screen. If you change the colour on every scan line of GRAPHICS 9 you could display all 256 colours and shades. You could even reposition players at different places on the screen making it look as if you have created more players.

```
QZ 10 DIM HEX$(16)
CV 20 LINE=10000:TAAP 100:J=0:STAAT=1536
VA 30 AEAD HEX$,CHKSUM:SUM=0
AA 40 FDA I=1 TO 15 STEP 2
ZB 50 D1=ASC(HEX$(I,I))-48:D2=ASC(HEX$(I+
   1,I+1))-48
KT 60 AUA=((D1-7*(D1>16))*16+(D2-7*(D2>16
   ))
LW 70 SUA=SUA+NUA:POKE STANT+J,NUM:J=J+1:
   NEXT I
LY 80 IF SUM=CHKSUM THEN LINE=LINE+10:GOT
   O 30
1N 90 ? "Checksue error on thie line:"
VD 95 LIST LINE:EAD
YS 100 PNINT "Data le eeeory."
XE 110 GAAPHICS 9
CV 120 X=USR(1536)
ZV 130 FDA I=0 TO 79
WN 140 COLON 1:15/79
FK 150 PLOT I,0:DRAWTO I,17:PLOT I,24:DAA
   NTO I,191
```

```
GD 160 NEXT I
CA 170 PO81TION 0,16:POKE 87,0
D5 180 END
OF 10000 DATA 68A05FA2D6A90620,734
FG 10010 DATA 5CE4A96AD0002A9,903
EZ 10020 DATA B6D0102A900B5CD,657
KO 10030 DATA AD2F0229DF0D2F02,676
NT 10040 DATA 6D0004AD300285CB,912
AW 10050 DATA AD310285CCA016A9,912
KA 10060 DATA BF91CBA902C891CB,1210
AH 10070 DATA C81D00F9CBA90291,1320
SJ 10080 DATA CBA09DA94191CBC8,1302
FD 10090 DATA A5CB91CBC8A5CC91,1430
XX 10100 DATA CDAD2F0229D0D2F,654
HT 10110 DATA 02A9C0D0DE046DA9,995
NA 10120 DATA 0085CD4C5FE446A5,974
NT 10130 DATA CDD00EAD6F02293F,817
1U 10140 DATA 0D0AD48D1BD04C82,945
AA 10150 DATA 06AD6F02D0D048D,796
GS 10160 DATA 16D0E6CD6E40,638
```

Listing 2

Spitfire 40

From Mirrorsoft.
Reviewed by Brad Mountjoy

Spitfire 40 is a game and an aircraft flying simulation all rolled into one. If you just want to fly around shooting enemy planes, you can do it in the game mode, but if you really want to fly the Spitfire properly, you can do that in the first class simulation mode. The manual supplied with the program is one of the best I have come across, it is full of information on how to fly the Spitfire, from take off to landing. You are told the correct sequence for take-off and landing procedures, how to manoeuvre during normal flight and during combat, how to climb, make turns, dive, slip sideways and what to do if you stall. Some aerobatic moves are explained including loops and rolls, and the 'split S'. A map of southern England is provided which can be used as an aid to navigation and also shows the position of enemy aircraft as well as your own Spitfire. There are 3 squared areas on the map which can be examined more closely and give ground details which can be used as landmarks.

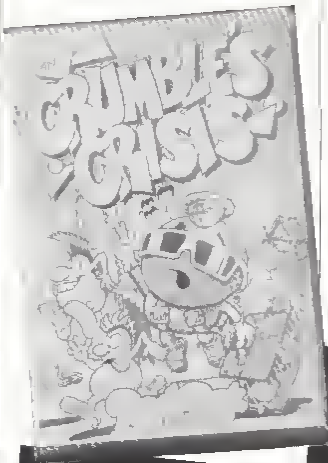
As well as the view out of the cockpit, a view of the instrument panel inside the plane can be displayed. Here you will find your fuel gauge, an airspeed indicator, a vertical speed indicator, artificial horizon marker, an altimeter and compass, and indicators for pitch, engine revs, rudder position, and slip and turn. Pressing the space bar toggles between instrument panel and cockpit view.

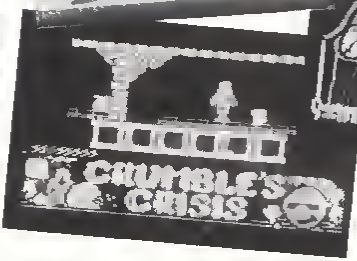
Pushing the joystick forward lowers the aircraft nose and pulling it back makes your craft climb. Left and right movement of the stick is used to turn the plane and the fire button sends a burst of bullets from your Browning machine guns. Some keyboard controls are also used. Q and W increase or decrease the power used, Z and X turn the rudders left or right, F toggles the flaps up and down, G toggles the undercarriage up or down, B toggles the brakes on or off and M displays the map.

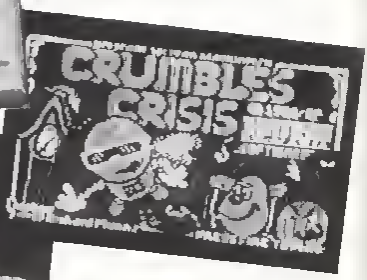
There has obviously been a lot of expertise put into this simulation, and in fact credit is given to a gentleman from the Battle of Britain Museum in Hendon at the end of the manual. Expert advice has been given and acted upon and as a result Spitfire 40 is a humdinger of a simulation. It costs £12.95 for disk or £9.95 for cassette, pretty reasonable for a program of this quality.











Crumble's Crisis

From Red Rat.
Reviewed by Otis Bey

Poor old Crumble, that thoughtless zoo keeper, has forgotten to lock the Fuzzies cage, and you know what they can be like when they are let loose. Thirty of them have escaped and hidden themselves in the Multiverse and its Crumbles job to find them. As is well known, once in the Multiverse you must keep moving or 'Time Lightning' will strike and drain your energy. It's also a fact that the Multiverse is composed of anti matter, any contact with the walls will destroy the protective coating on your Transversal suit. Not to mention the Goblins, Ghosts and Evil Weevals which abound in the Multiverse.

There are five levels to negotiate in your search, each containing more and more obnoxious monstrosities. There is also a practice level where you can spend time testing out your skill and perfecting your movement of Crumble.

Crumble's Crisis is a fairly standard platform type game. The graphics are very good, better than many, but not outstanding. Playability is good too, after a little practice, it takes a while to get the right combination of jet pack thrust and desired direction, but once mastered movement is easy. The way the screen is redrawn annoyed me for a while but I soon got used to it. The background music is excellent, well written and very tuneful.

Crumble's Crisis is priced at £9.95 for Disk and £7.95 for Tape. If I had to rate it against other platform types I would give it about 7.

Replay

From 2 Bit Systems.
A sound sampling package for 48K Atari computers.
Reviewed by Glissando.

The increasing popularity of sampled sound synthesisers, samplers to add to older synthesisers, have persuaded some manufacturers to produce simple devices to add to the home computer. They have been around for some time now on the Commodore/BBC and are now available to the ATARI music/sound enthusiast.

The package consists of a brief manual, a disk and a cartridge interface to a tape recorder, Hi-Fi, cassette recorder, Video, or any electronic instrument. The manual provides a very brief description of the REPLAY facilities, if anything, it is too brief.

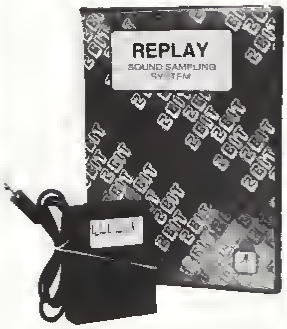
On the included disk are the necessary programs to allow communication, storage and incorporation of your sampled sounds into your own programs.

The main programs are REPLAY, which stores the sampled sound, DIGIDRUM, DIGISYNTH and USER.

To give the system a fair appraisal, I connected up my DE1200 Digital Delay, a Traynor 201 graphic equaliser, leads and adaptors to the Hi-Fi record, tape deck and radio, rhythm unit, synthesiser and a pair of top notch head phones.

The old ATARI 800 has been modified, quite extensively to improve the sound and TV quality. This has always been very weak on most computers. It is no better on the ST. One home micro that has tried to improve these features is the Amstrad. You may not get the same quality from your own system, as I have.

The cartridge comes supplied with a standard headphone jack plug, not as I would have thought, a standard quarter jack, or even a phono plug. You may find that adaptors will have to be made/bought to run on your own sound system. If you are using a portable or fixed cassette, you will be O.K. The manual recommends that a Graphic Equaliser is used between the source and cartridge. All of these devices that I have seen use quarter, phono or DIN plugs, not one uses a miniature headphone jack! Even if you don't own, or can borrow a Graphic Equaliser, there is no need to despair, the TONE CONTROL will assist in attenuating the higher frequencies. Although it is a 21KHz sampler with three seconds of sample rate, this has to be cut in half in practice. To give you some comparison, the ADAP sound sampler for the ST, is 44KHz with a 20 second rate and a 45 second rate at 21KHz! The effective rate for 11KHz, is 80 seconds! But that is another story.



With the expected limitations of an 8-bit system, with 48K of RAM, the results are not bad. I spent many enjoyable hours manipulating sounds with this device.

When a sound has been captured, it can be stored on disk or tape and the cartridge is not needed to replay them at a later date.

A most valuable feature of REPLAY, is the ability to incorporate your sound sample into your own programs. To do this is quite straightforward. One commences by merging the USER part of REPLAY with your BASIC program, using the ENTER "D:USER" command, if disk based, or ENTER "C:", if tape. The USER routines are line numbered in such a way that they do not interfere with your own program.

Once the programs are merged, simple machine code routines are used to call your named sample into a memory location. An example is provided in the manual.

Sound sampling on an 8 bit system has to be a compromise between quality and the length of the sample. For example, a recording duration of 12 seconds has a sample rate of only 6KHz, this is adequate for a male voice, but only just!! To add more fidelity to the recorded voice the sample rate would need to be increased to about 10KHz. The duration available at this frequency is only 7 seconds, and so on.

It can be directly compared to a multi-speed tape recorder. At an half inch per second speed, one can record an enormous amount of material on a given length of tape. But the quality is very poor. Increase the speed that the tape passes the head whilst recording and the quality likewise, increases. But the time available for recording has been dramatically shortened. At this moment in time, the best recordings available to us humble mortals, is the COMPACT DISK. Digital information has been burnt into a plastic base with a LASER, the recorded information is re-played again with a LASER. At the moment, the ability to record is confined to the music manufacturers. Or, one can use a standard video recorder to produce a very high quality recording. These devices are only moderately expensive, one could go to the other extreme of a four inch wide tape studio recorder. The only trouble is, money!

Looming over the horizon is a new and very exciting product using tape. This is cassette based, somewhat smaller than a standard cassette but with a sound quality comparable to the Compact Disk! It uses the same analogy that I have just covered. The tape passes diagonally across the head which speeds it up effectively widening the tape, allowing more data to be recorded with the net result that it will be very difficult to tell the LASER recording from the Tape recording, that will upset the record manufacturers!

Now that we have a better understanding of sound, recording and sound quality it is possible to look at the results produced on an ATARI with REPLAY. If you are using an electronic sound source, it is very important that the output is high, but free from any audible distortion. By following the instructions carefully, a recording is very easy to make. The sample rate has to be determined beforehand, using the criteria laid down. No problems, here.

Again, it is a very simple matter to replay the sample. Listen very carefully to the output. Do not be too hasty in your evaluation, if it is not quite what you expected. Is there any latent distortion? This may be due to the audio circuitry of the Atari, or even to the TV monitor. The latter can be easily checked by turning the volume up to maximum and noting the output quality with the Atari plugged in and out of it. If there is any mains hum, or other obnoxious sound, use this information when making your consideration. A good evaluation can even be made using your own voice as a sound source. Most tape recorders have a built-in microphone. Record a few words and then re-record them into the Atari. When you play back the sample, you can make an easy, direct comparison. I think you will be surprised at the quality. Once experience has built up with regards to sample rates and a given sound, you will be in a position to record, with certain limitations, due to the system, many useful samples. The examples on the disk are quite good.

The DIGIDRUM program is a very

simple rhythm unit, using pre sampled percussion instruments There are eight samples available BASS, SNARE, LOW TOM, HIGH TOM, COWBELL, OPEN HI HAT, CLOSED HI HAT and HAND CLAP

Two pattern demos are on the disk, simple, not particularly exciting but a good guide to what can be created

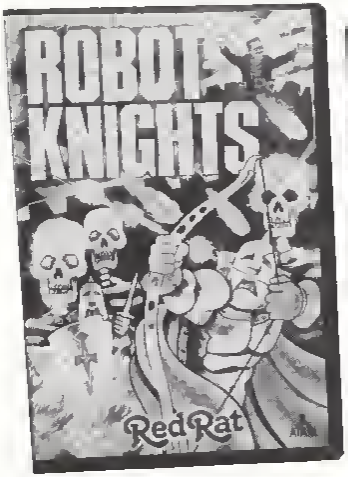
There are no fewer than five menu options available These are PATTERN, with 29 available to use/edit. PLAY has two further options, PLAY PATTERN and PLAY SONG TEMPO changes the tempo of the pattern The next option is SONG, which allows various patterns to be linked into one song. The final option is FILE for loading and saving patterns and songs

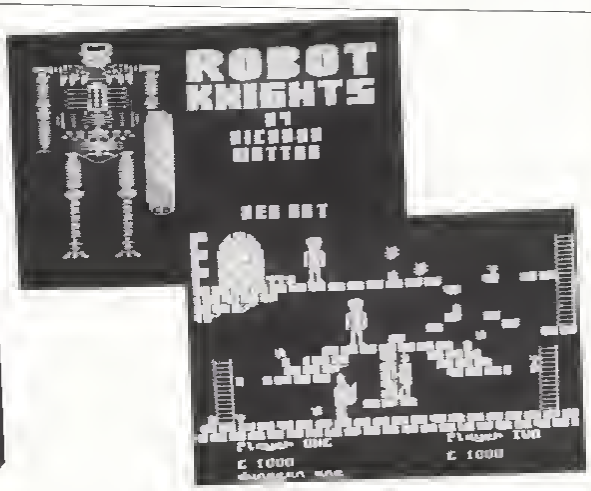
Another little utility on the disk is called DIGISYNTH This is a very simple sequencer that allows you to play tunes from samples you have created with REPLAY It only has one octave available and the possibility of storing only 256 notes in the sequence If the sampled sound is derived from a musical instrument it is important that the pitch of that instrument, is an A corresponding to 440Hz, the so called INTERNATIONAL A That's a good question for Trivial Pursuit?

Notes are entered via the keyboard and because there are only 12 notes to cover, these are the middle and bottom row of keys.

The options available are WIPE, clears the current song, TEMPO, PLAY and FILE

To summarise, I did not find any serious problems in using and setting up the system Fortunately, I have a very extensive supply of adaptors with which to interconnect all the equipment. The sample sounds on my out-board sound system was very good, especially when the limitations of the 800's speed and memory are taken into consideration I think there is a demand from software authors for this type of device and the serious amateur musician I think that it will be a little too expensive for most people at £40





Robot Knights

From Red Rat.
Reviewed by Otis Bey

Evil Otto has set himself up in a 13th century castle to produce the ultimate monster with which he can return to Futureworld and destroy civilisation as they know it. But the Controller of Futureworld has sent two 'Sir' class robots to defeat Otto in his own lair. Sir Binary Otto Liquidator Droid (BOLD) and Sir Bio Robotic Automatic Versatile Eliminator (BRAVE) can be used separately by one player or individually by two players who can help or hinder each other Sir Bold has an energy-bow which fires deflecting arrows and Sir Brave has an anergy deflecting shield Each robot only has one life so it must be looked after Energy can be gained by collecting energy sources, points can be scored by collecting treasure, deflecting enemy fireballs and plasma globes and getting to the next room You can lose energy by falling off platforms, being hit by fireballs/plasma globes being electrocuted, hit by a magnet or touching a zombie/enemy robot.

Sir Brave and/or Sir Bold must make there way from the dungeons up to the laboratory, via the secret passages, the lost caverns, the store room, the great hall, Otto's room and the transformer room, before Otto's monster can be awakened. Each new room is preceeded by a short introduction but this can be skipped by pressing any key On completion, or failure, your name can be added to a hall of fame to ensure you everlasting recognition.

A couple of tips When deflecting fireballs try not to let them bounce back at you as these will drain your energy Don't walk too close to the edge of a platform, Robot Knights have been known to fall off! Enemy robots and zombies only drain your energy if they are standing on the same level as you when you touch them. therefore just jump as you pass them.

Robot Knights is priced at £7.95 for Tape and £9.95 for Disk, pretty good value. For originality on an old platform theme, it gets top marks. The graphics could be better, but are fair for this type of game. The sound effects are average and the playability reasonable. Learning to climb stairs takes a time and slows the game down when you first play, once you have mastered this technique however, the game moves swiftly on and is much more playable

TURBO BASIC

Turbo Basic is a 'public domain' Basic interpreter from Holland. It works on the XL and XE (not on the old 400/800) and is available from the eight bit software library. It is on disk as an Autorun.sys file and is automatically loaded when you boot your drive. Turbo Basic offers 42 extra commands and 22 more functions than Atari Basic, in addition it gives the user 1603 more bytes of program space by 'hiding' part of itself under the XL/XE's operating system. It also runs 3 times faster than Atari Basic. Includes most DOS commands, has advanced graphics and programming functions, and is insensitive to lower case or inverse characters for most commands. It is credited to one Frank Ostrowski, and the list of commands given here was compiled by Dave and Laura Yearke.

The commands are listed in the format of name/syntax/description.

COMMANDS

Disk I/O

BLOAD / BLOAD "D:name" / Binary loads file named (DOS option L with /N)
BRUN / BRUN "D:name" / Binary load and run file named (DOS option L)
DELETE / DELETE "D:name" / Deletes the named file (DOS option D)
DIR / DIR / Disk directory (DOS option A)
DIR "Dn:**" / Directory of drive n, note that wildcard extenders may be used
LOCK / LOCK "D:name" / Locks the file named (DOS option F)
RENAME / RENAME "D:old,new" / Renames the file specified (DOS option E)
UNLOCK / UNLOCK "D:name" / Unlocks named file (DOS option G)

Graphics

CIRCLE / CIRCLE x,y,r / Plots a circle with the centre at x,y and radius r
CIRCLE / CIRCLE x,y,r,r2 / R2 is an optional 'vertical radius' for true circles or ellipses
CLS / CLS / Clears the screen
CLS / CLS # 6 / Clear screen opened in channel 6
FCOLOR / FCOLOR n / Determines fill colour.
FILLTO / FILLTO x,y / A fill command analogous to the Basic commands "POSITION x,y: XIO 18,# 6,0,0,"S:"
PAINT / PAINT x,y / Another type of fill command, this one is a recursive routine that will fill any closed object as long as x,y are inside it
TEXT / TEXT x,y,a$ / Bit blocks text in a$ at x,y

Memory

DPOKE / DPOKE m,v / Pokes location m,m+1 with 2 byte integer v (0 <= v <= 65535)

Public Domain from Holland

MOVE / MOVE m,m1,m2 / Block transfer: moves m2 (number of bytes) from starting position m to new starting position m1
MOVE / MOVE m,m1,m2 / Same as MOVE but copies starting with the last byte of the block.
BPUT / BPUT # n,adr,len / Block Put; same as FOR I=0 TO len:1:PUT # n,PEEK (adr+I): NEXT I
BGET / BGET # n,adr,len / Block Get, same as FOR I=0 TO len:1:GET # N,A: POKE (adr+I),A: NEXT I
%PUT / %PUT # n,a / Until now there was no convenient way to put numeric values onto disk or cassette files other than by using PRINT, which converted them to strings first, a slow and cumbersome process. %PUT puts the number to the device 'as is' in 6 byte FP format.
%GET / %GET # n,A / Get a number stored with %PUT from the device and store it in variable A. Again, this is much faster than using "INPUT # n,A"

Structured Programming

REPEAT / REPEAT / Start a REPEAT - UNTIL loop
UNTIL / UNTIL<c> / Terminate when condition <c> met
WHILE / WHILE <c> / Start a WHILE - WEND loop to end when condition <c> met.
WEND / WEND / Terminate a WHILE - END loop.
ELSE / ELSE / Optional extension for IF. The IF condition must not be followed by a 'THEN', but terminated by end of line or colon
ENDIF / ENDIF / Ends an IF-ELSE-ENDIF or IF-ELSE condition. Note that this allows an IF condition to span more than one Basic line, provided the IF statement is structured as shown in Note 5
DO / DO / Starts an 'infinite' DO loop
LOOP / LOOP / Cycle back to the start of a DO loop
EXIT / EXIT / Exit a DO - LOOP loop
PROC / PROC name / Start definition of procedure
ENDPROC / ENDPROC / End definition of procedure
EXEC / EXEC name / Execute procedure name

General Programming

PAUSE / PAUSE n / Pause processing for n/50 seconds
RENUM / RENUM n i,j / Renumber the program starting at line n, first number is i, increment is j. This function will handle GOTOs, TRAPs and all the other line references except those which involve variables or computed values
DEL / DEL n,i / Delete lines n to i

DUMP / DUMP / Display all variables and values. For numeric arrays, the numbers are the DIMed values plus one. For strings, the first number is the current LENgth of it and the second number is the DIMed size of it. DUMP also lists procedure names and labels with their line values
DUMP / DUMP name / DUMP to device named, such as "P:" or "D:DUMP.DAT"
TRACE / TRACE / Trace program during execution. TRACE turns trace mode off (default).
DSOUND / DSOUND n,f,d,v / Form of SOUND which activates channel pairing for increased frequency range. DSOUND without any qualifying statements turns off all sounds
GO TO / GO TO n / Alternate form of GOTO
*L / *L / Turn line indent on (default)
*L- turns line indent off
*F / *F (or *F +) / Special mode for FOR/NEXT loops which corrects a bug in Atari Basic. Seems that in Atari Basic, an 'illegal' reverse loop like "FOR X=2 TO 1:PRINT X:NEXT X" will execute once even though the condition is met initially (X is already greater than 1). Turbo Basic fixes this bug, but leaves it available for Atari Basic programs which may take advantage of it. *F- turns off this special mode
*B / *B (or *B +) / Command which allows the break key to be trapped via the 'TRAP' command within a program
*B- turns off the special break key mode
-- / -- / Special form of REM which puts 30 dashes in a program listing

Line Labels

/ # name / Assigns the current line number to the label name. This is a convenient way to get around the problem of renumbering when using variables as line numbers. Labels can be thought of as a special form of variable, as they occupy the variable name table along with the 'regular' variables. We also believe that the number of variables allowed has been increased from 128 to 256 to allow for the addition of these labels.
GO# / GO# name / Analogous to the GOTO command.

Modifications

CLOSE / CLOSE / Close channels 1 to 7.
DIM / DIM a(n) / Will automatically assign a value of zero to all elements of the numeric array being dimensioned, and null characters to all elements of a string (the LEN is still variable, however, and initially zero)
GET / GET name / Wait for a key press, assign the value to name. Same as "OPEN # 7,4,0, "K:" GET # 7,name: CLOSE # 7"
INPUT / INPUT "text",a,b... / Prints text

as a prompt before asking for variable(s)
Same as Microsoft Basic
LIST / LIST n, / List program from line n to end
ON / ON a EXEC n1,n2 / Variation of ON/GOSUB for procedures N1,n2 and so on are names of procedures to be run
ON a GO# n1,n2... is similar to ON/GOTO except that line labels are used instead of line numbers
POP / POP / This command now pops the runtime stack for all four types of loop
PUT / PUT n / Same as "PRINT CHR$(n)",
RESTORE / RESTORE # name / Restores the data line indicated by the label name
RND / RND / Parentheses are no longer needed at the end of this command, but it will still work if they are there
SOUND / SOUND / Turn of all sounds
TRAP / TRAP # name / TRAPs to the line referenced by the label name.

FUNCTIONS

Arithmetic/Logic

HEX$ / HEX$(n) / Convert n to hex string.
DEC / DEC(a$) / Convert hex string A$ to decimal
DIV / n DIV i / Integer quotient of n/i
MOD / n MOD i / Integer remainder of n/i
FRAC / FRAC(a) / Fractional part of a
TRUNC / TRUNC(a) / Truncates fractional part of a
RAND / RAND(n) / Generates random number 0 to n
$ / $nnnn / Allows input of hexadecimal numbers, but they are converted to decimal. Example "FOR I=$0600 TO $067F" becomes "FOR I=1536 TO 1663".
& / n & i / Eight bit boolean AND
! / n ! i / Eight bit boolean OR
EXOR / n EXOR i / Eight bit Exclusive OR

Memory

DPEEK / DPEEK(m) / Double PEEK of m,m+1.
TIME / TIME / Time of day (numeric).
TIME$ / TIME$ / Time of day string, HHMMSS
INKEY$ / INKEY$ / Returns last character typed
INSTR / INSTR(x$,a$) / Returns relative location of start of string A$ within X$ (returns 0 if not found). The match must be exact; strings with the same letters but differences in case or type (normal or inverse) will not be found. INSTR(x$,a$,i) can be used where i specifies the starting point of the search
UINSTR / UINSTR(x$,a$) / Same as INSTR does not distinguish between case or inverse characters
UINSTR(x$,a$,i) specifies optional starting point.
ERR / ERR / Value of last error number
ERL / ERL / Line last error occurred at

Constants

The four constants %0,%1,%2,%3, simply stand for the numbers 0 to 3 respectively. The difference with using these in a program is that 'X=1' requires 10 bytes, whereas 'X=%1' only needs 4 (numbers require 7 bytes, 6 for the number plus an identifier preceeding it. It is always a good practice to make variables for numbers that are used more than 3 times in a program).

NOTES

1 Variable, Procedure and Label names may contain the underscore character
2 To print a double quote in a text string, use two of them together, instead of the Atari Basic method of using CHR$(34). For example "TEST", CHR$(34), "TEXT" becomes "TEST" "TEXT" in Turbo Basic.
3 Upon initial boot up, Turbo Basic looks for a Basic file named Autorun.Bas. If it finds one it will automatically load and run this file
4. Turbo Basic prints out English descriptions for all errors, including several new ones for the new commands

Error - 22 ?NEST = Loops not properly nested.
Error - 23 ?WHILE = WEND with no corresponding WHILE
Error - 24 ?REPEAT = UNTIL with no corresponding REPEAT
Error - 25 ?DO = LOOP with no corresponding DO
Error - 26 ?EXIT = EXIT is outside a loop
Error - 27 ?XPROC = Error executing PROC
Error - 28 ?EXEC = ENDPROC with no corresponding EXEC
Error - 29 ?PROC = Procedure does not exist.
Error - 30 ?# = Label does not exist

Also, Error 15 has been expanded to include an UNTIL which relates to a REPEAT which has been delated
5 A multiline IF is constructed like this

```
10 IF X > 10
20  PRINT X,10
30  GO# TOO_BIG
40 ELSE
50  PRINT X
60  GO# X_IS_OK
70 ENDIF
```

Note also the use of line labels in the GOTO statements



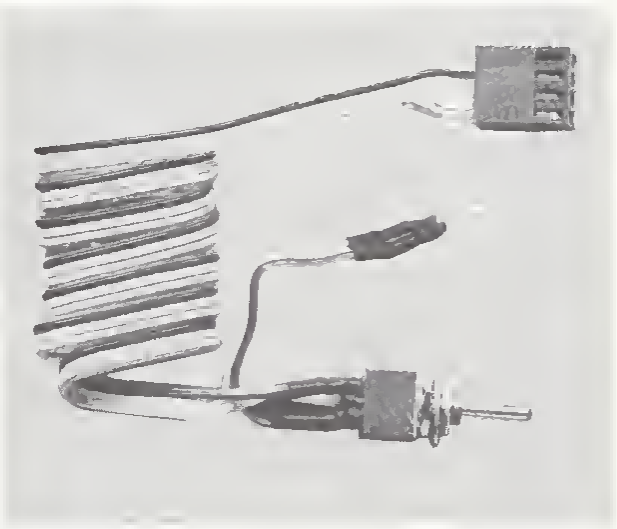
1050 WRITE SWITCH

By BUG

Before you read any further, please bear in mind that any modification or alteration to your Atari equipment, other than that completed by authorised service agents, renders any guarantee null and void But if your equipment is more than 12 months old or you want to modify and 'risk it', then read on

This modification to your 1050 disk drive will allow you to write to both sides of a disk without having to remove the write protect tabs (just think, no more sticky glue marks on your disk, and you can forget about notchers, hole punchers and razor blades) It makes writing to the disk as easy as pie, but beware there is always a snag! It's so easy to use you can forget to check the LED colour and overwrite your master disk! Disaster!!

To those dedicated Atarians who are still with us and haven't decided to proceed no further, I can say that I have used this mod for the last 6 months without losing a single disk of data In addition, many members of the Birmingham Atari User Group (BUG) constructed the mod as a club project, and there has been a 100% success rate so far, with no data losses



Construction

A list of parts is shown in this article, descriptions are given together with quantity and the code number of each item which can be found in the Maplin electronic component catalogue

The first task is to construct the switch and LED wiring harness and then to fit it into the drive. Take the 1 metre length of 10 way ribbon cable and separate 3 wires from it, cut these three wires to a length of 3 inches, separate the 3 wires for about half an inch at each end of the 3 inch piece Strip the insulation back about 5mm on each wire (at both ends) and tin the wires with solder ready to be soldered in position. Cut eight quarter inch pieces off the heat shrink sleeving, and put 3 of them onto each wire, at one end only, well back down the wire so that the tinned part still shows.

Figure 1 shows the multicoloured LED with its pins marked 1,2 and 3 Note also the position of the flat on the LED's case Solder one end of the three wires to the legs of the LED, one wire to leg 1, another wire to leg 2 and the remaining wire to leg 3. Slide the heat shrink down over the joints apply a little heat and the sleeving will shrink and protect each joint. Each leg of the LED must be isolated from the others

Take the remaining length of three wires and cut off (16 inches if switch and LED are to be fixed externally) 12 inches for connections between switch and drive Strip and tin the wire ends as before, both ends On one end solder the three Minicon terminals and insert them into the Minicon housing Figure 2 shows the correct positions for the 3 wires in the 4 way housing You should now have an LED with 3 wires attached and a Minicon connector with 3 wires attached

Now you must connect these to the switch Referring to Figure 3 you can see where the six wires should connect to the switch First though, locate the wire designated 2 on the LED and the wire designated 5 on the Minicon and twist the two tinned ends together, solder them into one connection Now you only have five wires to connect to the switch which, as can be seen in Figure 3, is all you need Take the remaining 5 sleeves and push them over the five wires (including the paired wires) Now solder each wire to the switch in its designated place. Be very careful here, make sure you get it right. As you solder each wire in place, pull down the sleeving and heat shrink in position You should end up with a completed assembly as shown in Figure 4

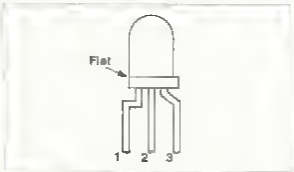


Figure 1

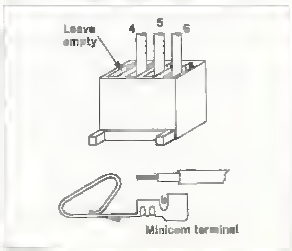


Figure 2

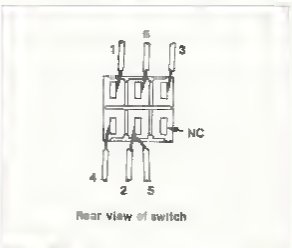


Figure 3

Fitting

At this stage you can either fit the assembly inside the 1050 case or fit it into a box that can be attached to the side of the drive with sticky pads

To fit internally turn your drive upside down and remove the 4 Phillips screws in the base Turn the drive right way up and remove the top cover by lifting from the rear Looking into the drive from the front, you will see 5 brown connecting blocks at the left rear (they have lots of white wires on them) Locate plug J11 it's the one nearest the front Carefully remove plug J11 with a pair of long nose pliers, do not pull it out by the wires as they are fairly delicate Once unplugged you can just leave it disconnected, it should not interfere with the operation of the drive. You could tape it to the side if you are worried Insert the Minicon plug you have just made into J11, ensure the pegs on the base of the Minicon housing are pointing inwards towards the centre of the drive

Remove the dark grey front surround plate and lay to one side Using Figure 5 as a guide, decide on the best positions for the LED and the switch Drill a 3/16 inch hole for the switch and a 9/32 inch hole for the LED holder Insert the switch into its hole and tighten up with the nuts supplied Insert the LED holder into the hole, put the holder locking ring over the LED and then insert the LED into its holder push down the locking ring and secure the LED in position Place the front surround back in position and reassemble the drive case

If fitting the mod externally, feed the cable from the switch around the case and enter via the drive select switch then insert the plug as described earlier

Testing

Power up the drive the LED should either be red or green If not your connections may be suspect. Move the switch until the LED shows red Insert a DOS disk and try to format, if all is well it won't be able to do this Set the LED to green, now when you format all should be normal Remember red equals protected green is go (you can write to the disk)

Finally

All the components used are readily available from your local stockist, or you can try Maplins, as their codes have been quoted If you are not the type to build your own, a kit of parts is available from Micro Discount P.O Box 946 Sutton Coldfield West Midlands B74 3EZ The kit costs £3 50, or a ready assembled version is available for £5.50 (add 25p for postage)

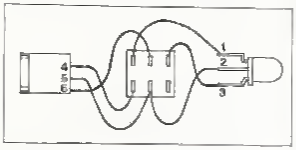


Figure 4

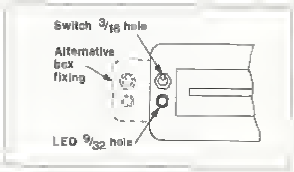


Figure 5

PARTS LIST

Multicolour LED (YH75S)
LED Holder (YY40T)
Ultramin DPDT switch (FH99H)
Minicon housing 4 way (HB58N)
Minicon terminals (YW25C) 3 off
Ribbon cable 10 way (XR06G) 1 metre
Heat shrink sleeve (BF87U)

CRABAPPLE GETS CARRIED AWAY, SUES SELF

A recent unconfirmed report claims that Crabapple Computer in a recent spate of litigation against competitors and former employees, accidentally sued itself According to an anonymous source in the Silicon Valley computer makers' legal department, the Alviso headquarters sued the Milpitas assembly plant, where the firm builds the Pippin computer, for trademark infringement.

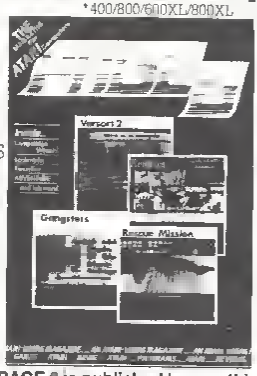
"It was really funny how it happened," the source said "About the time we were suing [ex-Crabapple Chairman Steven] Snobs, a new member of our junior staff got lost on the freeway and drove past the Pippin factory When he got to the office, he told us how there was another Crabapple on the other side of the valley We naturally assumed this was a new Snobs operation, so we sent a memo upstairs recommending legal action and they sent one back telling us to go ahead Imagine how embarrassed we were when we found out we had sued our own plant!"

The source told us the suit was settled out of court "I guess this is what you can expect now that Crabapple has more lawyers than engineers," she said.

When contacted, Crabapple general counsel Mike Mouthpiece claimed no knowledge of the incident. He also threatened to sue this reporter if any word of this story appeared in the press

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ENTER DIRECT

By Ron Levy

I am sure you have all seen and used some of the many programming utilities which are available in fact you have probably knocked up a few of your own from time to time Here I will show you a novel method of creating and using these which is so unbelievably useful, and yet so simple, that you will almost certainly wonder why you did not think of this yourself

Let's start with something which is probably the most useful and common, the disk directory Suppose that you ere writing or editing a BASIC program, and you need to look at a disk's directory If you are using DOS 2 or DOS 2 5 you are stuck, because going to the DOS menu will lose your program (and the mem-sav facility is clumsy and slow to say the least!) It is possible to write a short program in BASIC to display a disks directory, but to run it you would normally have to either LOAD it as a separate program (thereby losing the program you were working on!), or add it to your program as a separate subroutine (not always convenient) Now I will show you a much better alternative!

Type in Program 1, but instead of SAVING it to disk, list it onto disk by

```
10 10 CLR :DIM F$(20)
MA 20 CLOSE #5
26 30 OPEN #5,6,0,"D:*.*"
IW 40 FOR I=1 TO 64:INPUT #5,F$:PRINT F$;
   IF F$(5,8)<>"FREE" THEN NEXT I
```

Program 1

typing LIST "D DIR.LST" You can also RUN the program to test it, you should get a disk directory on the screen, just as when you use the A option from DOS

Now lor the interesting part, type in and save Program 2 This is our main program, and its function is to take a program that has been LISTed to a disk file and create another file containing the same listed program, but with its line numbers removed (we will see why very soon)

Run Program 2, and when it asks for the name of a file to be converted, type the filename used to store Program 1, (D DIR LST) It will then ask you for a name to give to the final program, and in this case you should type D DIR. So what

```
EN 0 REM ******************************
PL 1 REM *    ENTERCVT...By Ron Levy    *
IC 2 REM *    ++++++++++++++++++++      *
AL 3 REM * This progrem will convert a *
II 4 REM * LISTed progrem file on disk *
YE 5 REM * into one which you can then *
IY 6 REM * run using Immediate mode by *
HY 7 REM * typing ENTER "D:filename"    *
PU 8 REM * without disturbing your     *
PV 9 REM * currently loaded progrem.    *
NY 10 REM ******************************
IN 100 DIM FILE$(15),FILE2$(15),LINE$(120
   0)
LN 110 PRINT CHR$(125);:POSITION 6,0
UD 120 PRINT "ENTERCVT...By Ron Levy"
KZ 130 POSITION 0,1
DI 140 PRINT "++++++++++++++++++++"
TN 150 PRINT
KZ 160 ? "This will strip the line nuober
   s from"
FN 170 ? "a LISTed Basic progrem file, so
   that"
IO 180 ? "it can be run in Immediate mode
   using"
CF 190 ? "the ENTER commend."
TO 200 PRINT
DY 210 PRINT "SOURCE file nmes.....";
OG 220 INPUT FILE1$
TH 230 PRINT "DESTINATION file nems.";
OZ 240 INPUT FILE2$
LX 250 IF FILE1$="" OR FILE2$="" THEN 200
RU 260 OPEN #1,4,0,FILE1$
VC 270 OPEN #2,8,0,FILE2$
LL 280 TRAP 400
KP 290 PRINT :PRINT
ZN 295 PRINT "Converting line";
GH 299 REM
AH 300 REM Now transfer file1 to file2.
HV 310 INPUT #1,LINE$
BK 320 FOR L=1 TO LEN(LINE$)
LH 330 IF LINE$(L,L)=" " THEN 350
HF 340 NEXT L
GM 350 PRINT #2;LINE$(L+1)
TR 360 POSITION 18,12:PRINT LINE$(1,L);
MR 370 GOTO 300
RG 390 REM
IG 400 REM Error trap routine.
JF 410 ERL=PEEK(187)*256+PEEK(186)
IC 420 ERR=PEEK(195)
FS 430 IF ERR=136 AND ERL=310 THEN 500
GM 440 ? :PRINT CHR$(253):REM Buzzer!
UC 450 ? "Progrem halted due to letal arr
   or!"
AU 460 ? "Error Ie ";ERR
ZN 470 ? "At line  ";ERL
UA 480 STOP
SI 499 REM
GN 500 REM Close the open files.
IN 510 POSITION 10,16
SH 520 PRINT "Progrem finished ok."
XO 530 CLOSE #1:CLOSE #2
OC 540 END
```

Program 2

```
CLR :DIR F$(20)
CLOSE #5
OPEN #5,6,0,"D:*.*"
FOR I=1 TO 64:INPUT #5,F$:PRINT F$;IF
F$(5,8)<>"FREE" THEN NEXT I
```

Program 3

will D DIR contain? Take a look at Program 3

This is ol course the same as Program 1, but this time there are no line numbers Try typing each line on your computer, but remember to press RETURN only at the end of each program line, not at the end ol each physical line See how it operates in exactly the same way as the version with line numbers. Now type the lollowing line

ENTER "D DIR"

Notice that we have managed to run the program without any line numbers

How Does it Work?

The answer is quite simple. When you use the command ENTER to load a program from disk, BASIC works in exactly the same way as if you typed lines in from the keyboard Now you can type commands into the keyboard without line numbers and they are executed immediately (called immediate mode

operation), so it follows that you can also ENTER commands in immediate mode from a disk file, and this is how our program works. It operates without affecting the program that you have loaded at the time.

Creating Files from DOS

If you are rather more experienced with your machine, there is a quicker way of producing these 'immediate mode' programs using DOS.

Go into the DOS menu, and type C for the COPY FILE option. DOS will then prompt you to enter the file names. You should then type the following line.

E:,D:DIR

You might want to use a different disk filename, especially if you are entering your own program. The E: is the screen editor's device name.

You can now type in the program without line numbers (Program 3). When you have typed the last line, you tell DOS to stop the copy by holding down the CONTROL key, while pressing the 3 key. CONTROL 3 is called the 'end file' key. At this point DOS will close the file and return to its menu.

Watch Out

The best way of working with these immediate mode utilities is to have a main work disk and keep this in your drive while you are programming or experimenting. There is, however, a major limitation which you should bear in mind. You cannot use the commands GOTO, GOSUB or RETURN, or indeed any command which refers to a line number (directly or indirectly). Another, not so obvious limitation is the FOR..NEXT loop. This will only work if both FOR and NEXT commands are in the same line, because as an immediate mode program runs each line is 'forgotten' once it has been executed.

Another Example

As a last example, try the same process on Program 4, once you have LISTed it to disk. Call the program D:LINES.LST, and call the converted program just D:LINES. When you are ready, type ENTER "D:LINES" and you will see fine black lines suddenly appear underneath each line on the screen!

This program works by re-writing the DISPLAY LIST just below the existing one, and inserting a BLANK ONE LINE instruction between each existing

```
OX 5 REM ...Gives Lines on Gr.0 Page...
IL 10 OLD=PEEK(561):DL=PEEK(560)+256*OLD
RH 20 DL1=DL-256
OC 30 FOR A=1 TO 6:POKE DL1+A,PEEK(DL+A):
   NEXT A
GF 40 FOR A=6 TO 50 STEP 2:POKE DL1+A,71:P
   OKE DL1+1+A,2:NEXT A
ME 50 FOR A=52 TO 53:POKE DL1+A,PEEK(DL+A
   -23):NEXT A
RF 60 POKE DL1+54,PEEK(561)-1
EH 70 POKE 561,DL-1
```

Program 4

GRAPHICS ZERO instruction

These lines are fixed, i.e. they don't scroll away, and can be cleared by pressing RESET or giving a GRAPHICS command. You could, by the way, incorporate this program into one of your own as a subroutine, and then you can switch these lines off by using the command POKE 561, OLD-1.

If you can think of any utilities which would be useful converted to these IMMEDIATE MODE files, please send them in. We would be very pleased to receive them, so start thinking, and get WRITING.

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Software Librarian - Roy Smith

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2 The program you donate must be your own original and not copied

3 Your donated program must be submitted on a cassette or a disk programs in the form of print outs cannot be processed

4 If your program requires any special instructions they should be added in the form of REM statements within the program (or you may present them as instructions when the program is actually run)

5 BONUS Every program submitted per quarter (between issues of the magazine) will be eligible to be judged 'STAR PROGRAM' for that quarter. This carries a prize of £10 which will be paid to the author. The programs will be judged by the Editorial Team and their decision is final. The Editorial Team are not eligible for the prize

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7 The '3 for 1' exchange is only open to club members

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by Mark Christian Wirral
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by Alan Curtis Somerton
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520ST-FM+ (1/2 meg upgrade tp 1 meg RAM)	£599	£521
Mega ST 2meg and 4meg (Spring/Summer)	£phone	
PC models (Summer)	£phone	
Configurations to suit your requirements	£phone	
PRICE MATCH PRICE MATCH PRICE MATCH	*PRICE MATCH*	
KEYBOARDS		
1040ST-F keyboard unit + mouse + software	£599	£521
With UHF modulator ADD...	£50	£44
520ST-FM keyboard unit + mouse + software	£399	£348
520ST-FM+ (1/2 meg upgrade to 1 meg RAM)	£499	£435
520ST-M keyboard unit + software	£260	£226
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PRICE MATCH PRICE MATCH PRICE MATCH	*PRICE MATCH*	
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PRICE MATCH PRICE MATCH PRICE MATCH	*PRICE MATCH*	
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ST PROGRAMMING

By Keith Mayhew Part One

This is the start of a new series about programming the ST range of computers These articles will not be aimed at the complete beginner as they will assume that you have at least some programming experience Although this series could cover any aspect of programming the ST, it is necessary to narrow down the choice of material to be covered, at least initially This is for at least two reasons Firstly, there are a large number of viable languages with which to program the ST, ranging from assembler and BASIC to MODULA II, Prolog and LISP Secondly, the size of the ST operating system means that it cannot be covered in a step by step fashion, at least not in the space here.

If you intend to program the ST seriously then you will need to choose an appropriate language(s) to work in, and have reference manuals for the operating system Unfortunately, the documentation for the ST currently available in book form is far from satisfactory Unless you have the ATARI/DR (Digital Research) development pack,you will have to put up with this situation - it is the only point on which the ST is really let down

Now the question arises, what is actually going to be covered in this series? Well this is as much up to you as it is to me If you write in and state what you would like to see covered then it is likely to influence the direction in which this series goes Also it would be of benefit to everyone if you wrote lots of awkward questions which you would like answered, I am prepared to look at any problems! Initially though, I personally want to see GEM programming covered in detail The reason for this is that there are many other articles on ST programming but they tend to cover the more straightforward parts of the operating system Furthermore, GEM is the one part of the operating system which needs in-depth explanations, where it is of little use knowing the function calls if you don't have the faintest idea what they actually do! Now for the choice of programming language I will surprise few people by choosing 'C' The main reasons behind this choice are that it is a relatively high level language and so is much more concise and readable than pages of assembler C is the best supported language on the ST and most of the ST operating system was written in it Lastly it runs at sufficient speed so that assembly language is of no need this is more to do with the architecture of the 68000 than the language itself The only other language which I might have chosen would have been MODULA II it's certainly a better language than C but isn't as popular probably because everyone has been told how fantastic C is!

Although C will be used in example programs demonstrating how to use GEM, this doesn't mean that this series will be of no use to those of you who want to use another language The biggest battle with GEM is understanding how it works and the concepts behind it, which is what I shall be concentrating on Thus it will not be too difficult to apply the ideas in the language you are using However, if you are yet to start learning a high-level language for the ST then C is probably your best bet (at least it will be easier to follow this series) If you are someone who writes only in assembly language then you will find it an awful lot easier to use GEM via a high level language, the argument that assembly language ought to be used for speed just doesn't hold on the ST for most types of applications (even games) and if you really do need the extra speed then C compilers and other languages, allow you to link in assembly language modules in the necessary places

Unless you just want to read along out of sheer interest then you will need a C compiler and a resource construction program Even if you are not going to use C, the resource construction program is a bare necessity for programming with GEM There are a large number of C compilers to choose from on the ST and the choice will have to be up to you, as they all generally implement the full language, do not buy one which doesn't. Lattice and Megamax C are two of the most popular compilers If you buy Lattice you will also need to buy a resource construction program, here I have no problem in recommending K-Resource from Kuma, whereas Megamax has one as part of the package Either way the price works out about the same but K-Resource is much better than the one supplied with Megamax and on the other hand Megamax is a one-pass compiler which means you won't have to wait as long for a compilation as you would with Lattice As I said, I will leave the choice to you!

The ST Operating System

We will start with a brief overview of the ST's operating system which is for some reason, called TOS TOS is a large program taking up 192K of ROM and has surprisingly few bugs considering its complexity Even these bugs are not hindering as they are very minor and should not stop you developing programs Any bugs you think you might have come across were probably caused because a book told you the wrong way to do something!

TOS consists of four main parts, they are BIOS, GEMDOS, VDI and AES BIOS stands for Basic Input Output System, GEMDOS stands for GEM Disk Operating System, VDI stands for Virtual Device Interface, AES stands for Application Environment Services VDI and AES collectively form GEM which stands for Graphics Environment Manager

BIOS, and its extension XBIOS, handle all the low level activities of the ST such as dealing with interrupts and 'talking' to disk drives and printers, etc GEMDOS is a level up from this and uses the BIOS to implement the file system of the ST

VDI is at the lower level of the two and provides a vast number of functions to provide such things as lines, circles, arcs, pie slices, polygons, flood fills and text output, to name but a few VDI actually calls upon the 'Line A' routines to achieve much of its work. The Line A is of little use to most people though, as it is basically a small sub-set of the VDI, but it has the advantage that it is faster and easier to access from assembly language The best reason for using the VDI for all graphic output is that GEM, as you all know, is available on other machines So if you write in a high-level language (68000 assembly language is not portable to the IBM range as they use the 8086) and use GEM, then if you want to market a program it will be of more potential if it were portable (that's the theory anyway)

What makes GEM look like GEM is the AES AES uses the VDI to provide such useful things as windows, menus and dialogue boxes which form the heart of the GEM 'user friendly' interface

This first part is going to end short having given an idea of what is to come Next time we will actually get straight into C programming and GEM, so be warned!

In the meantime you can make sure you have the appropriate tools ready If you are already experimenting or are more advanced, and have come across problems then please write in and I will do my best to answer them Just to make it clear I will consider any type of problems, not just ones connected with GEM.

Hollywood Hijinx

Review by Mike Stringer

This text adventure was written by Mr 'Hollywood' Dave Anderson and has only just arrived, so I have not had too long to get very far with it!

I always look forward to seeing the releases from Infocom and I have not been at all disappointed with this new product. Hollywood Hijinx is well packaged and included in the pack is 'Tinsel World', a very typical American send up of a magazine devoted to the TV and Movie fan.

As is usual in most adventures these days, 'Tinsel World' is compulsory reading. Hidden within the multitude of articles, snippets, adverts and the gossip columns are clues, lots of clues, but are they of any use? Some of the articles are very funny, especially if you make allowance for American humour! The adverts too will bring many a chuckle!

For example, have you ever wondered what to do with all those old nail clippings? According to Brother Bob, of Hopperville, Indiana, just one nail clipping can unlock his psychic powers which will reveal the 'special numbers' which will end your money worries, forever! He succeeds where all others fail. You will find the full address on the page that has your Editor's portrait!

There is also 'Lotto Lady', 'Fat Melt' bubble gum, the 'Lucky Palm' swizzle stick and much more!

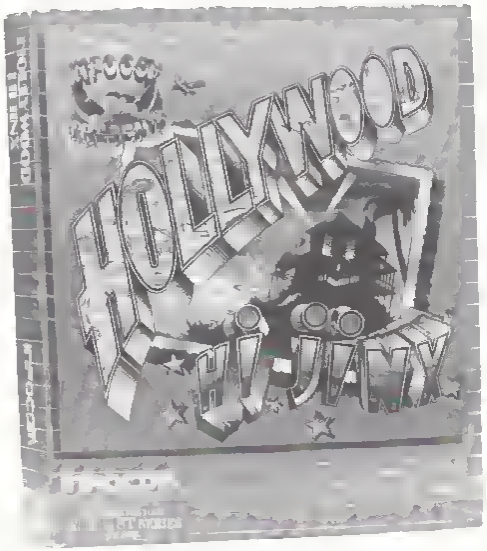
Incidentally, a Lucky Palm swizzle stick is included, but in order to unlock its secrets you will have to contact an address in California, be warned!

You are the heir to a fabulous fortune bequethed to you by your 'late' Aunt Hildegard and Uncle Buddy. Uncle Buddy, as you have probably guessed is none other than that world famous Mega Star – Buddy Burbank, creater of no fewer than 600 movies!

To claim the fortune, you must recover ten pieces of treasure that have been very cleverly hidden throughout the house and gardens within twelve hours - and at night!

I hope this has whetted your appetite, I found Hollywood Hijinx very amusing, entertaining and a great challenge.

Hollywood Hijinx is available for the ST and the XL/XE. The ST version will be £29.99 and the 8 bit version £24.99.





BCPL

From Metacomco
Price £99.95
Reviewed by Keith Mayhew

BCPL is an old, yet popular language and many of its features influenced the design of the language C. If you program in C, Pascal, Modula II, or a similar language, then what will first strike you about BCPL is that it has no types, instead all addressing is done in machine words. In this respect BCPL offers the facilities of an assembler with the structure and convenience of a high-level language.

As usual with Metacomco's languages, the package consists of their screen editor, MENU+ and GST's linker. Metacomco have also kept up their policy of supplying the source code to the library interface,this is highly appreciated.

This is a good implementation of the BCPL language, so it should be possible to port a lot of the code written in it onto the ST, such as compilers and editors. Metacomco have also extended the language so that it can be linked with C routines as well as assembler. The ability to call C routines is necessary on the ST as all the operating system calls are in that format. An external reference facility has also been provided so that global variables from C and assembler can be accessed from BCPL.

32-bit words are the standard for this compiler, but 16 bit access is also provided, as well as the standard byte addressing. A floating point package and a good BCPL library of functions, including the ability to create and call co routines, makes this an excellent compiler.

K-Resource

From Kuma
Price £39 95
Reviewed by Keith Mayhew

For those of you are who not familiar with resource files, they contain the information to create menus, icons and dialogue boxes, etc. If you intend to program with the GEM interface, then a resource construction program is essential. I can thoroughly recommend K Resource to both the beginner and the advanced GEM programmer It is a superb program

K-Resource has a desktop set-up very similar to the GEM Desktop and allows you to copy, delete, rename files, create folders, etc , without leaving the program My only complaint here is that I would have preferred to work with text instead of icons for files, or at least had an option, but it is no real hardship

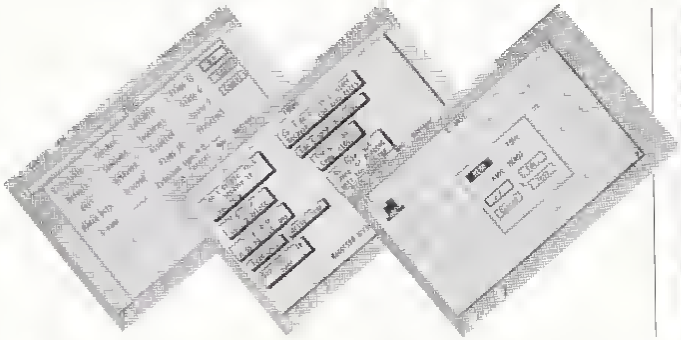
The resource editor itself has been made very easy to use. For instance, if you leave a name field blank when it shouldn t be then an error box pops up circling the field and explaining the problem Pop up menus are used extensively throughout the program and appear under the mouse pointer for you to make your selection In fact most of the features of the editor are geared towards the speeding of the editing process

Anybody who has used either Digital Research's or Megamax's editors will appreciate the finer touches of K Resource. It is not possible to go into too much detail here on all the features offered, but the author has gone to great lengths to ensure that the program offers a great deal of assistance in creating resources Menus automatically re size to hold their entries, the alternate key is used to insert the special validation characters in editable fields, the icon editor allows 'blurring' of the mask, an automatic way of generating the outline for masks, the editor allows you to use the desktop as a clipboard for objects by just dropping them onto it and dragging them off again, a separate 'snap' option does away with the distinction between 'forms' and 'dialogues' , icons can be shown at their correct height for low resolution, so allowances can be made for them, the list goes on

Of interest to the more advanced programmer is the ability to insert extra flags into objects which are unused by GEM In this way you can mark 'OK' and 'CANCEL' buttons without having to keep naming them You can also identify new types of object with this method, such as 'hot' objects like menu entries

K-Resource will accept files from most editors and can create header files for the languages C, Pascal, Modula II and FORTRAN 77

I would have thrown DR's editor away long ago if it were not for the fact that K Resource cannot generate a source file for a resource I have used K-Resource for some months now and have had no problems at all with it, I will continue putting it to good use and suggest you do the same.





Make

From Metacomco
Price £49 95
Reviewed by Keith Mayhew

Make will be a useful utility for anyone who is writing a program which consists of more than one source file Regardless of the language you use, you can write a small 'makefile' which describes how you compile and link all the files to create the final program Actually this does require the assembler or compiler to be invokeable from a command line. All of Metacomco's languages can use Make and I expect that most other languages will be applicable too

The 'makefile' consists of rules that specify which files have to be compiled after an edit. Make determines which source files have been changed by looking at their time/date stamps compared with their object files This requires you to properly set the clock before touching any files For this purpose a small program is supplied which can be placed into the auto folder on your boot disk which will always ask for the date and time on power up Alternatively, I would recommend you get a battery backed-up clock such as Microdeal's MICRO-TIME

Explicit rules state what files are needed to create a particular file and the command to be executed to create it For instance, a program file will require a series of object modules which have to be linked together by the linker An object file will require a source file to be compiled by the compiler

Implicit rules state general dependencies, such as all object files are compiled from their source files with the same compiler These rules will save a lot of typing, as will macros which allow you to substitute one string for another There are more subtle facilities available which will prove useful as you gain knowledge of how to create makefiles

Having used Make on UNIX systems I am pleased to see a proper implementation on the ST It has very few omissions and a few extensions, such as allowing rules based on directories instead of just the extension name of a file Make is a very useful tool, which I shall continue to exploit, to reduce my time in developing programs When Make is used with MENU+ and Lattice C, a very convenient and powerful development package is created Add Kuma's K-Resource resource editor and you have a complete GEM development package which is better than Megamax C at a comparable price.

WS REVIEWS ST REVIEWS ST REVIEWS ST

MICRO-TIME Clock Card

From Microdeal
Price £34 95
Reviewed by Keith Mayhew

It's amazing ST's have enormous memories but they have great trouble remembering the correct time and date! What is needed is a battery backup to keep a clock running while the machine is turned off. MICRO TIME offers just that.

Unlike some other clocks available for the ST, this one does not use the cartridge port but hides away inside the machine, leaving the cartridge port free for other purposes

The instructions supplied are very easy to follow and take you step by step through installing the small circuit board. No soldering irons are needed, just screwdrivers.

The board plugs into the underside of the keyboard after removing the keyboard controller chip from its socket. This chip then plugs into the board. After sticking the Ni Cad batteries down onto the computer's metal shielding and replacing the screws in the case, installation is complete. It is very easy and can be fitted to both the 520ST and the 1040ST

The instructions warn you that on old versions of the keyboard the chip is round the opposite way, thus it is simply necessary to fit the board the same way round as the chip. The machine I fitted the board to was one of the first batch of 520ST's available and had a large capacitor in just the wrong place, stopping the board from plugging into the socket! This meant soldering wire to its legs so that it could be moved out of the way. For the majority of people this will not be necessary as this only applies to very early machines (I assume).

The disk supplied contains a few utility programs, most of which are public domain. These include clocks, calendars, the control panel and a very small program which sits in the auto folder on your boot disk to ensure that the correct time is transferred from the keyboard chip to the operating system clock on boot up

MICRO TIME will be a useful addition to most machines, especially if you would like to keep track of files by their time/date stamps. Utilities such as Metacomco's Make rely on times being correct. For a hard disk, with so many files to keep track of, it is invaluable, it's just what I have been looking for!

The Alternative Atari ST

Reviewed by Mike Stringer

Recently released by MICRODEAL, the Alternative Atari ST is quite an original utility. It is a keyboard expander for GEM based programs. Alternative resides as an accessory which is called, when required, just as any other accessory. Thirty six different keyboard keys can be allocated a string of up to sixty characters. These keys are A to Z and 0 to 9. The novel part of this program is that the ALTERNATE key is pressed at the same time as the other key. Experienced users will be familiar with a CONTROL key, SHIFT key and even ESC key combinations, now there is another to learn. Whenever an ALT (key) is pressed, the pre-determined string is inserted into the text at the position of the cursor. It is suitable for any system, mono or colour and it also requires at least an 80 column display.

On the disk is an Editor, with which you create the various strings, and the documentation clearly takes you through the various stages. In use, two files are copied to your in use disk. These are the ALT.ACC and ALTAUTO.DAT (which you create). Obviously, you can create as many different ALTAUTO files as you like. It all depends upon your requirements and imagination. One very useful feature is the ability to chain ALT (key) strings together! This feature is a very good idea. Where tedious text insertion is used, it is much faster than using the normal Cut and Paste procedures. All the ASCII codes can be inserted, using Control/Key commands.

Although I have only used it for a short period, there is a tremendous potential for this type of utility. In communications, a file could be set up for telephone numbers, pass words and oft repeated phrases. In programming, the same principles would also apply. In application spreadsheets, such as VIP, one could create a file containing Macros and text. As more and more GEM programs become available, so this program could be integrated.

For a cost just under £30, I think it is over priced. Just because it is classed as a utility, it should not automatically follow that it should cost an arm and a leg. Or, in this case, a finger and a thumb.



Karate Kid II & International Karate

From Microdeal (£29 95)
and System 3 (£22 95)
Reviewed by Matthew Tydeman

I suppose you should blame the cinema and video machines for the recent flood of Karate games currently making their presence felt in the ST hit parade Launched at the 1986 PCW Show was Paradox's ST Karate, forming a rather impressive standard for other spin offs to try and better Also seen at the 1986 PCW show, but sadly not for sale at the time was that rather unpunctual Atari 8-bit karate program converted to the ST, International Karate. Time has moved on however, and recently released was Karate Kid II The Computer Game, and after no apparent wait, which was pleasing

Karate Kid II, without a doubt, wins an award for making a sequel to a non existent original, but does it win an award for a great program? International Karate however, starts off on a sore point, as the program was removed from retailers shelves around the New Year period after bugs were reported in the program? Let us just thank System 3 for getting the program out on time even though it did'nt work. The review copies which I have been kindly handed, were first seen publicly at the Christmas Atari Show, while demonstration pictures were given away free at the PCW Show These pictures quite simply stopped people in their tracks while walking the isles of the show and gave great publicity to Microdeal and the programmer of International Karate.

It is going to be hard to describe these two masterpieces Where does one start? The stunning title screens, the impressive and realistic background scenes, or the incredible animation of the characters in these perfect conversions

Possibly one of the best loading sequences seen on any of the karate programs so far is in International Karate, it certainly entertains you whilst your waiting for your, hopefully bug free, program to load Once the second data disk has loaded the game can begin You will be taken on a trip to many historic cities around the world, Sydney, Rome, New York, Mount Fuji and good old London Town to name but a few These background scenes are quite amazing and include great animation ranging from girls dancing in Ra Ra skirts to balloons floating in the perfectly clear skies. Great picture detail certainly goes to make this particular version of karate a winner The oriental background music goes down well too!

Present in every battle of skill is the judge – an old and wise looking person complete with balding head and authentic robes From his controlling position in play he gives his result of the last round – half point of 100 is usually the result when you play as good as me, but full scores of 1000 are obtainable As you progress up through the levels, various coloured belts will be awarded to you - finally a place in the hall of fame is offered where scores will be saved to the disk for lasting recognition

The smashing of tiles with your head is of course incorporated into International Karate, together with a very different and impressive Weapons Stage, requiring you to manipulate your player through fields of moving spears, swords and stars Timing is very important in this level

Karate Kid II is a single disk version of karate which has, like its competitors, quite superb background scenes complete with misty hazes and realistic architecture Great time and effort has obviously gone into creating these realistic scenes, noticed not just in Karate Kid II, but in other karate programs Karate Kid II includes such stunning detail as reflections from the sun, snow capped mountains, flowers on typical low lying oriental tables and cascading plants over arches on surrounding walls

Daniel and his friend Toshio, together with a few other interesting characters fight very well better in fact than the movemants of International Karate I'm not one to recognise a professional karate move when its placed right in front of me but I can see from Karate Kid II that many moves have been included to guarantee sheer back breaking pain for your opponent. If beating your opponent to death isn't enough to keep your brain happy then the Concentration screens should keep you confined to your ST for a long time These so called bonus rounds require you to control the hand of a wise and magical man who has sadly never heard of fly spray and so has to use his last resort to capture the annoying fly between his two chop sticks An impossible task at the best of times let alone after you've just been beaten to death

After your virtually impossible confrontation with a fly, one moves onto Ice Breaking Timing is once again important while completing the task at the correct time may prove to be easy, it is learning the correct timing that proves a somewhat hard task

Karate Kid Part II is one of those classic ST programs which is hard to



beat in terms of game play or otherwise Its bonus Concentration rounds give Karate Kid II some originality over other karate programs while the effective graphics and sound make it a program set for popular success.

I don't really think I've yet to witness any unplayable karate game All seem to be a race to get your opponent bruised and crawling around the ground as quickly as possible. Although it is hard to notice in my bugged review version of International Karate, and at times you are so busy pushing the joystick in every conceivable direction that it does'nt affect your play too drastically, movement and control over your character seems a little hard at times, some of the listed moves



in the manual I feel are yet to be incorporated International Karate's demonstration mode is also bugged, requiring you to switch the machine off to exit.

Both programs deserve to do well and have no reason not to With the bugs straigtened out it is now possible to get extended play from the historic adventures in International Karate.

Karate Kid II and its interesting originality makes the program fascinating to watch Though there are now so many karate titles available for the ST, it is nice to know that one can seek a change with such programs as Championship Wrestling and World Games, whose events include Sumo Wrestling

Trivia Challenge

Reviewed by Mike Stringer

This program has been written for the United States market but does not detract from its enjoyment over here Those of you who have travelled around the U S may have come across fruit machines, or 'one armed bandits' from which this game has evolved

Trivia Challenge can be played on a mono or colour system its presentation is quite simple but adequate. The game is played with the mouse and only suffers from one drawback, it adheres vary strictly to the original concept, you cannot have a multi player game! The only way around this little problem is to use only a quarter when you play, take alternate turns, or to pool the knowledge

The purpose of the game is to answer, from a choice of three answers, questions from a topic that you choose. These range from GENERAL KNOWLEDGE, which is the default subject and is also the largest THE ARTS, POP MUSIC and SCIENCE AND TECHNOLOGY

To play you have a kitty of ten dollars and you then feed this back into the 'machine' either in units of one dollar, when you get five goes, or a quarter (25 cents), which lets you have one go Each go is worth two wrong answers For each correct answer you score points and the faster you can select the correct answer, the higher the points you receive. The game gives you twelve seconds in which to answer after which you forfeit a wrong 'un When you loose your go, you receive cash to add to the kitty This is one dollar for 1,000 points and then 50 cents for each additional 500 points

There are nearly four thousand questions supplied, they are very good



and will provide more than a Trivia Challenge!

Included on the disk is a utility to create your own file to add to the main program This is done via a word processor such as 1st Word, which enables an ASCII file to be created This file is then read into the utility which converts it into the necessary Trivia format The file you have created will eventually replace the General Knowledge file on the disk This file is copied onto a spare disk and your file added to the Trivia Disk Unfortunately, it is only possible to add on a file in this manner Although, if you prepare additional files and can accept the titles that are already there then I cannot see any reason why this cannot be done For example say you created a file with FILMS as the subject, one could replace the ARTS file with your file.

Alternatively, if, in your Utilities file, you have a Resource Construction Set, it is an easy task to modify the RSC file of the program allowing an infinite number of subjects There should have been an example of a pre formatted file on the disk to examine but this was missing from mine I have had no difficulty in preparing some files for my revision students As a source of addictive enjoyment, either on an individual, or collective basis it ranks very high in my humble opinion It is the second most popular game in my family, Microdeal's CARDS is the numbar one, believe it or not! It gets a 'hammering' for a couple of hours every evening when the television transmissions cease

As an EDUCATIONAL TOOL though, it is potentially THE BEST I have ever come across and that is no exagaretion! Multiple Choice examination papers are the norm these days, from G C S E , A level City and Guilds, upwards The elements of SPEED, ACCURACY HAND and EYE CO ORDINATION and REWARD for effort are the ingrediants for success Especially when there is a TIME element thrown in for good measure. The pressure and concentration required to do well in this game is very evident

It does have a couple of problems, not in the program but in the included files There are many careless spelling mistakes and quite a number of incorrect answers! This does not really detract from the overall enjoyment, in fact it adds a touch of cynical humour!

With the formation of an ST library in the very near future, this is an ideal platform for contributions from you But, please ensure your answers are correct, use a dictionary and, for good measure, put the files through a Spell Checker!

At £19.95, it is GREAT!!!!!

ST Blitter

by Mike Fulton
Reprinted from OrnJuce Nov 1986

What is a Blitter? Just what exactly does it do? Well, a Blitter chip is a chip which blits! At this you may say, "Evan I know that, but what does it mean?" The term Blit is short for another term Bit Block Transfer (Bit BLT) This is a fancy name for moving the contents of one part of memory to another part, or transfarring a block of bits The way it does this is special Instead of working on whole bytes of memory, blitting allows the individual bits of each byte to be accessed separately This way a bit logic operation can also be performed on each bit during the transfer This is very important when working with graphics memory, since one byte of memory may represent several points on the display screen

The ST already has blitting routines written in software These routines are used for many purposes, including most graphics output to the screen. Even printing text on the screen is done by blitting the character data from the font to the screen Also, every time you move a window around on the desktop, you are making the system blit the screen memory to another part of the screen memory

Because the ST's blitting routines are in software, the 68000 cpu must do everything all by itself This works fine, but a custom designed blitter chip can do this faster Once the 68000 sets up the right parameters, the blitter chip can do the blit operation without any more help, doing it faster and freeing the 68000 for other things.

One important thing to know is that the blitter chip will have new TOS ROM chips with it In the new ROM chips the current software blitter routines will be replaced with routines which just pass the necessary information to the blitter chip This way all programs which used the current software blit routines in the normal manner will still work with the blitter chip, but at a higher speed

Programs which do not use the current software blit routines will not experience any difference in speed with the blitter chip This is important since most current games with a lot of animation probably use their own routines instead of the built-in ones. These games will not be speeded up beyond the point of playability.

Bit Transfer Secrets

Since the major uses of blitting are with the graphics and text output, the GEM blit routines are designed to be easily used in this fashion. The Atari ST also has a set of low level routines which are designed specifically to be used by the GEM graphics routines, including blitting, which is known as the Line-A Interface. Using the blit routines is easier done with GEM, because the Line A Interface can usually only be accessed via machine language For all but the most speed intensive uses, there should not be any practical differances in performance. Regardless of which method you choose, most of the following information applies to both methods of accessing the blit functions

Before blitting to or from an area of memory, you first define the area as though it was a graphics screen, or raster form There is a special memory structure used by the ST for just this purpose, called a Memory Form Definition Block, or MFDB The MFDB is set up like this (a long is 4 bytes of memory and a word is 2 bytes)

MFDB —
long ADDRESS (Address of form)
word X_RES (Width in pixels)
word Y_RES (Height in pixels)
word WORD_WID (Width in words)
word FORMAT (Memory format flag)
word PLANES (No. of bit planes)
word RES_1 (Reserved value No 1)
word RES_2 (Reserved value No 2)
word RES_3 (Reserved value No 3)

The ADDRESS parameter should be set to the memory address of the top left corner of the rastor form When using the GEM VDI blit routines, if this address is set to 0 then the routines use the actual display screen for the form and GEM fills in the rest of the parameters by itself Don't do this when using the Line A routines, because it will not work

The X_RES and Y_RES parameters are used to define the height and width, in pixels of a memory form This can vary quite a bit depending on what sort of memory form is involved For example, the ST's system font data is a memory form 2048 pixels wide, and either 8 or 16 pixels tall (depending on the screen resolution used) That's a very wide, short form!

The WORD_WID parametar is used to hold the width, in words, of the form This is to determine how much memory is used by each row This can be determined by taking the X_RES parameter and multiplying it by the PLANES paremeter, and then dividing the result by the word size (16 bits) You use the result rounded up to the next integer

Before discussing the FORMAT parameter, let's skip to the PLANES parameter This is used to specify how many bit planes are used in the memory form What is a bit plane? Well, it's not easy to explain, but here goes!

The ST's screen memory is arranged in bit planes The number of colours available depends on how many bit planes are used. With 4 bit planes, there is one bit in each plane for one pixel on the screen Since 4 bits can contain 16 possible combinations, this is how many colours the screen can have with 4 bit planes Thus, monochrome resolution has 1 bit plane with 2 colours (white or black), medium has 2 bit planes and 4 colours; and low resolution has 4 bit planes with 16 colours If the ST could have 5 bit planes, you could get 32 colours and so on The video chip of the ST grabs one bit from each bit plane and adds them together to get the colour to display for each pixel on the screen

The FORMAT parameter is used to tell the bit routines how the bit planes of the form are arranged. Because of the way the ST's video chip works the bit planes are mixed together in a certain way But this is only the way the ST works Since the GEM blit routines must work on different computers, and each computer might have its own method of arranging screen memory, there are two ways this parameter can be set The first is called Device Specific This means the memory for the bit planes is arranged in the way the device (in this case, the ST video chip) uses it On an IBM running GEM, this means the memory is arranged the way the computer's graphics card wants it

The second format is called Standard Format. This means all the bit planes are separated from one another All of the first bit plane's memory comes first, followed by all the second bit plane's memory, and so on One of the GEM blit routines is designed to convert from one format to the other When blitting is always done within the same system, as for drawing programs or animation, this paremeter is almost always used as Device Specific But when there is a need to move data across different systems, it is changed to the Standard Format first

On the ST, Device Specific is usually used for everything except for displaying fill patterns, character font data, and drawing icons on the desktop, since these things are sometimes shared across different systems.

The last three parameters, RES_1, RES_2, and RES_3 are all reserved for future expansion and should always be set to zero

Finally, after setting up both your source and destination forms you set up an array which contains the top left and bottom right corners of both the area you are blitting from and the area you are blitting into Both areas must be the same size, or you will get strange, unpredictable results

FAST BASIC

Review by Mike Stringer

From Computer Concepts

This cartridge based language has been released for some months and it has only now been offered to us to review It is very difficult, considering the extent to which other magazines, etc have already passed judgement, to come up with fresh and original observations To make matters worse, in fact it is rubbing salt into the wound, the first Fast ST Basic Accessory, the disk which allows one to create stand alone (PRG) files, has been released and even that was not included in their package! THEY are Computer Concepts and their program retails for a fraction under £90

I mentioned Computer Concept's short sightedness to Mike Wilding (M C S) He wes as surprised as I He very kindly allowed me to borrow a copy to examine ff left to C C , we would, in all probability, have had a copy in time for the Summer Edition of Monitor! C C charge £10 for this disk and, considering its usefulness it is very good value for money This utility allows you to produce a PRG, a true stand alone program, from a BSC file I had no difficulty in following the instructions provided, to create my own programs It will provide you with an ideal way to support the ST Library that I am trying to get started If you have FAST BASIC and would like a copy of the utility, please contact Mike, at Mikes Computer Store, I do not have a supply!

Let us see what we have got for our £90 There is a manual, a keyboard/menu/text and keyword crib sheet the cartridge and a disk of demos etc For most people this will probably be the first time that a cartridge is used and the setting up of the system is well documented and should not present any problems even for owners of hard disk based systems

Having 128K byte available in ROM has the obvious advantage that this amount of memory is released to the system plus the added advantage that it is instantly available All that is required is a double click on the Cartridge Icon and it is up and running Incidentally, this isn't the FAST bit of the title, that comes later!

F S B is not really BASIC To describe it as such, is a bit of an insult to its authors I would prefer to describe it as a Programming Environment using familiar BASIC type commands It is VERY powerful There have been many comments comparing F S B to BBC Basic. but did not make any reference to the common denominator That is the brilliant Jeremy Rushton Let's face it, be honest, the only decent aspect of computing with the dreaded BBC Micro, is its BASIC There isn't a great deal else to shout about. Anyone who has any experience with that language will immediately feel very much at home, and users of other breeds will adapt, without too much hastle The only major gripe I have is that Atari Basic users have to stoop to the BBC Basic level for familiar keywords For example if a PRINT command was needed one simply uses ? "Hello" The ? used, is a form of shorthand The BBC Basic command is PRINT It is surprising how deeply imbedded in the brain this command is. I found it very difficult to adapt Mind you, I have been using the old BASIC since the days when 4K of RAM cost £50! Even BBC BASIC has shorthand The PRINT statement could be shortend to P For some reason this has not been implemented in FSB SHAME!

The faithfulness to BBC BASIC is so close that I purchased from Mikes Computer Store a most interesting book called STRUCTURED BASIC by Richard Freeman (£7 25) to put it to the test. EVERY program in that book, except for those that were computer dedicated ran on the ST Even those that had VDU calls, etc were easy to convert over or by pass Parents with children learning BBC BASIC at school please take note They can continue their studies at home on the cheaper and much better ST using FSB!

Now that we have established its pedigree, let us examine what FSB has to offer

When one considers those very powerful BASIC cartridges and ROMs that are used in 8 bit systems, many of which were under 30K byte, one can



begin to imagine what can be designed around a 128K byte device almost five times larger it has introduced a new meaning to BASIC programming

There are many programmers who continually hammer BASIC as a language giving rise to descriptions like 'plates of spaghetti', 'bird s nests' and so on In the vaste majority of instances they are justified and quite correct! Most programs written in BASIC are messy and sloppy those other descriptions are very good FSB allows programmers to be able to construct their masterpieces with the same degree of technique as one produced with C, PASCAL Modula 2, and so on Even line numbering is not required! You can put them in if you HAVE to but the first thing the program will do is strip them off!

One command that has done more for poor BASIC programming technique, is the dreaded GOSUB It is a keyword in FSB but not only can you go to line numbers, but also to LABELS! The examples quoted are

```
GOSUB 1000
GOSUB (X% + 100)
GOSUB fred
GOSUB ( "fr" + "ed" )
```

The popularity of GOSUB, is its speed FSB encourages good programming technique, with great emphasis being placed on structuring with very simple and effective commands to utilise the immense power of GEM

FSB is not a language that has been imported from other machines but has been designed specifically for the ST Its features are impressive but it is the speed which is most impressive! This is the FAST bit of the title I will not bore you by putting up speed criteria obtained from Benchmark programs run on many makes of machine, because these are well documented I thought I would try to evaluate it on two machines that were not on the list. The Mackintosh and the very popular Amstrad The Mack owner f knew raved about Z Basic and the Amstrad owner was similarly enthralled by a similar version I gave them the benchmarks to try them out on their machines, with the times taken on the ST i did not hear from them again, re those tests A lot of excuses, but no timings! f wonder why? Is it just possible that these great machines are lacking something? f suppose f will never know I know you are all saying that Benchmarks are not everything, that is true But it is an indication of potential There is a very good Benchmark available in C called 'Dhrystone', that IS meaningful. It thoroughly examines many different

aspects of the computer I am doing a translation to try and evaluate FSB, but I don't think I am going to have it in time for this article – the Editor is already making strange noises!

A great deal of emphasis is placed on the fact that FSB is a STRUCTURED BASIC and this relatively new style is to be encouraged There should be a plan BEFORE you set out to write a program, observing some basic criteria Firstly, its STRUCTURE should be clear Secondly, its PURPOSE should be clear Thirdly, it should be easy for you and others TO READ If this style is alien to you, do not despair Take time to look at the many examples to be found on the included disk, either by displaying them on the screen from the desktop, or through the program's Editor Most are well REM'd, others are excellent

After the Cartridge Icon is activated, the main screen appears Two windows appear, although a third, IMMEDIATE, can be easily added This differs from the other ST BASIC which, of course, uses three These are EDITOR & OUTPUT The next thing you notice is that it employs GEM, complete with drop down menus and all those good things

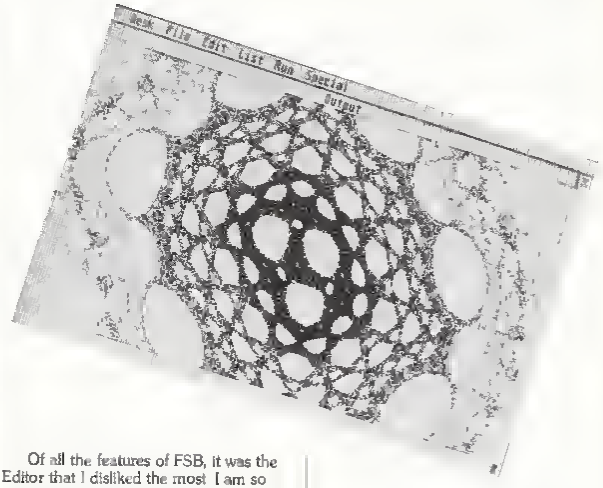
A quick look at the amount of available RAM on my machine indicated that I have just over 740K byte to use Even on a machine with 520K available there is still sufficient RAM remaining to allow up to ten programs to reside at any time! The default size is 32K per section, but this is flexible You can design the workspace according to the requirements of the program

The Menu titles are an UP ARROW DESK, EDIT, LIST, RUN and SPECIAL The UP ARROW's purpose puzzled me for a while before it dawned that it was a CASE indicator! UP for upper and DOWN for lower case Nice touch that one!

DESK is the usual 'about', plus any desk accessories you may wish to include I am using only one at the moment – The Alternate ST (see my other review) I find this to be extremely useful with FSB Mainly to get some text and phrase speed into the programming. For example Alt P results in 'PRINT "', Alt R produces 'REM ' There are quite a number of Alt (key) commands resident within the program, so I am very careful when using it Alt P, for example, finds the previous string and Alt R, RUNS the current program!

The EDITOR, as well as the IMMEDIATE screens are where all the masterpieces are created No fewer than 56 Editor keys can be used, by pressing SHIFT (key), ALTERNATE (key) and CONTROL (key). These are well documented on the crib sheet, although only a dozen, or so, are to be found in the Manual Admittedly, these are the most commonly used.

On the EDIT Menu are to be found a few wordprocessor facilities, CUT, COPY, PASTE, CLEAR, SEARCH, REPLACE and REPLACE MARKED



Of all the features of FSB, it was the Editor that I disliked the most I am so used to using a word processor environment in my programming with C and Modula 2, that I would have liked to have seen more of this type of feature implemented For example, line length control, wordwrap justification, save and continue, save as ., set mark, goto mark, goto line, show position and so on One very useful Editing aid, available from the keyboard or from the drop-down menu, is a choice of no fewer than four font, or text, styles The smallest, is very minute. Each character measures 6 x 6 pixels This style is very useful for presenting a large portion of a program on the screen. Very roughly, there are 54 rows by 100 columns The styles increase in size up to a mammoth 16 x 32 pixel character This size will be very useful for teaching purposes the characters are very easy to read from 12 to 15 feet away from the screen It will also be extremely useful for those with severe visual handicaps There are about 10 rows by 37 columns

I did notice that some improvements had been made in this version, compared to an earlier one I had spent a few hours with For example, the 'set and hide ruler' command used to take about 30 to 40 seconds to activate On this version, the same commands are instantaneous 'Search' would often delete the string being sought I was hoping that a very strange procedure would have been eliminated, or varied. This was forcing a Return directly following a 'THEN' command A most alien command, I am still having difficulty in coming to terms with this one!

The LIST Menu covers such topics as PRINT PROGRAM, PRINT CLIPBOARD, SHOW CLIPBOARD, DUMP OUT BUFFER SHOW CODES, CLEAR OUTPUT, SHOW TAB RULER.

The RUN Menu has RUN, TRACE PROGRAM, DELAY IN STATEMENTS, TRACK VARIABLES IMMEDIATE WINDOW

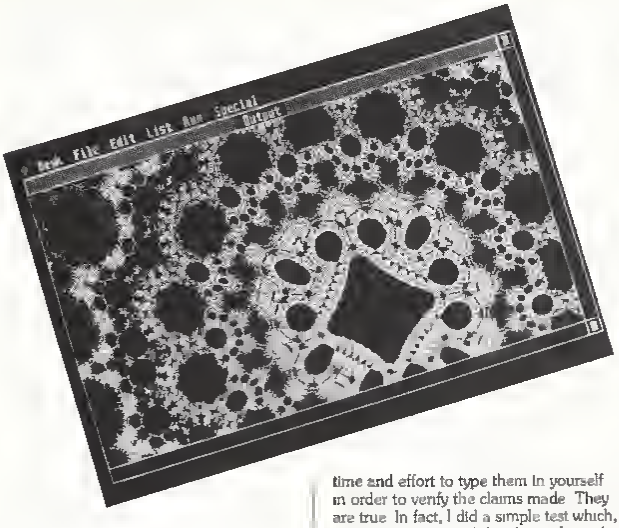
The SPECIAL Menu has LARGE and SMALL clean up, SAVE DESKTOP, CLEAR ERRORS, PREFERENCES

So much for the brushes, but what about the paint and its quality, with which to produce our masterpiece? A cursory glance at the manual, will dispel any worries you may have on that score! All the familiar ones, plus a great number of new ones Including the commands to create programs that use GEM That is very much an added bonus Up until now these features have only been available on Upper Class languages such as C and Modula 2!!

I thought I would have a quick look at all the keywords with the assistance of a Beeb text book checking as I went along, with the manual There were quite a few missing from the manual. One of these keywords was KEY Tracing the use of this word back to its BBC origin, I learned that one could ascribe a string of text to a FUNCTION KEY That sounded very useful! I tried and tried to get this to work, but I failed Never mind, eh?

There were some other, very interesting features built in Take, for example, BLITTING There has been a lot of excitement recently over the availability of a new chip, the BLITTER, for the ST BLIT functions transfer memory, or screen data, around very rapidly Perhaps some of you may have seen the demo at the Autumn Exhibition, with the Flying Parrot? The normal version was running on the same set up, next to it. The difference was spectacular! I am looking forward to its release so that I can take full advantage of all its features In the meantime, run the BLIT demo on the included disk and I think you will be as impressed as I was

Another potentially useful accessory included on the disk is the SPEAK module I can remember forking out a lot



of money for S.A.M. when it first appeared on the 8-bit 800. This version is very good, considering the sound generator of the ST. My opinion of the ganerator, by the way, has improved after running the NSQ.PRG by Lee Actor, author of the Advanced Music System, in the Winter edition of START. It is outstanding!

To cover all the aspects of FSB is way beyond the scope of this article. I think it would be more helpful to you if I was to describe to you some of the examples to be found on the disk. All but one example can be run on a standard 520 ST. That one example does require 1 megabyte and a disk with at least 600K available. Some of the other examples can only be run in low resolution, others are mono and medium res only. I will point out the various modes as I get to them.

Let us take a look at the monster, it is called MAKEPMPL. The program creates eighteen high resolution pictures. These are then loaded into RAM and rapidly projected, in series, onto the screen as an animated movie. It is quite fascinating to watch and is a very good example of high resolution animation. I wouldn't go so far as to say that you fork out the £50, or so to upgrade your 520 to 1 megabyte just to see this demo, but it does demonstrate what is possible with it!! I would not recommend you creating this program if you are impatient or of a nervous disposition, it takes almost three hours to create. The program SHOWPMPL is loaded, which, in turn loads the eighteen pictures in to RAM. This takes a few seconds and the animation commences.

In the file selector are the eight P.C.W. Benchmarks, which they use in the evaluation of computers and languages. These certainly save you the time and effort to type them in yourself in order to verify the claims made. They are true. In fact, I did a simple test which, marginally, improved the claims. I simply ran each Benchmark ten times and noted the fastest times, not just the average. Incidentally, the time of execution is printed automatically each time, no need for stop-watches here!

Balls (J.R.)

Low Res

This is an excellent demo. A 32 x 32 pixel picture is wrapped around a series of sixteen spheres whilst each one is slightly rotated with respect to the other, creating the illusion of an animated rotating square. The second part of the program allows you to paint a simple picture, or pattern. When you are satisfied with the end result, press the SHIFT key. Shading is then automatically added to your masterpiece. Next, the sixteen spheres appear four to a screen, with your pattern wrapped around them. Eventually, the animation of the spheres tekes place.

Barworks (J.R.)

Best in Medium.

This is a nifty demonstration of many of the graphic keywords that are available. The speed with which these images are created is fantastic. Even in high resolution, it is most impressive.

Bezier (J.R.)

Best in High Res

With the mouse, guide the arrow to any place on the screen and press the left button. Repeat this a further three times. A Bezier curve will then be created, the four being the points you marked. Can be very impressive.

Blitdemo (J.R.)

High Res.

A grid of sixty 64 x 64 pixel, pictures are created when run. A little plant grows out of a flower pot, matures and flowers. Then along comes a little bee, which visits each flower in turn. The little plant and the bee die (aah!!) and the whole thing starts off once again. Very impressive.

Dragdemo (J.R.)

Any mode

A short program to demostrate the GEM DRAGBOX command using the mouse and left button.

Fractal

Best in Mono

By changing the parameters of the command MARKTYPE, some very attractive images can be created. Three numbers are used: positive or negative, large or small, tiny or minute. Even numbers of 0.01 difference produce very noticeable differences. Don't be in too much of a hurry to quit a given set of numbers before trying some more, some plots take simply ages to develop, but they can be well worth it. It does not take too much imagination to see sections of plant stems, sponges, diatoms, radiolana and foraminifera. I like this one a lot. And, it is amazingly fast when you consider the mathematics that are taking place.

Gemdemo (J.R.)

Any mode.

This particular program should be studied very carefully if you would like to incorporate menus, boxes and buttons in your programs. In fact, it is advisable to print the program out to allow you to grasp more quickly, the overall scheme of things. It is very well documented, a simple program but brilliantly scored.

Iconed (J.R.)

Any mode

A very useful demo. It demostrates how you can create ICONS, save them and then incorporate them into your own programs. Excellent.

Landscri (J.R.)

High Res

This is a very impressive demo of FSB ability to produce some brilliant scrolling graphics, using the shift buttons to control it. Honestly, it is very hard to believe that it is BASIC that you are watching and not one of the more sophisticated languages that are available.

Outline (J.R.)

Any mode.

A simple demo, introducing some new commands, which repeatedly outlines the screen. It is supposed to be similar to the algorithm used in MACPAINT.

Neoprocs (J.R.)

Low Res.

This is quite a useful utility to use in conjunction with NEOCHROME. The example of the sepia toned 'Mona Lisa' is very well known, it appears in virtually all CC's adverts. There are three additional functions available to the NEOCHROME artist: SMOOTHING, INVERTION and OUTLINE. I am afraid that my artistic talents are limited to 'Smiley' and 'Mr. Whot'. I have nothing but admiration and a hint of envy, to those who produce these works of art.

Scrnanim (J.R.)

Best in mono.

Four more screens are created, each slightly out of phase with the other. Using the command PHYSBASE, each screen is page flipped to create the illusion of animation.

Shade (J.R.)

Low Res.

This is another NEOCHROME utility which uses a special technique to produce a very stylish and professional shading effect to NEO paintings.

Speaker (J.R.)

Any mode.

This program links into the SPEAK module to perform a little speech, demonstrating this novel utility. It is very good.

Wishwash (J.R.)

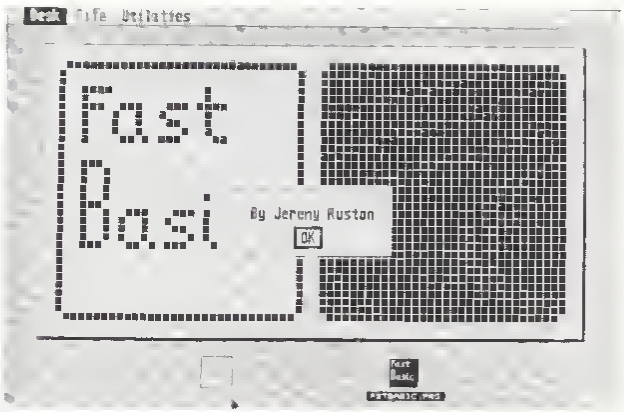
Low Res.

This is a little drawing utility to create Art Nouveau pictures, very cute!

In all the examples covered in the DEMO folder, I found it very difficult to believe that they were all written in BASIC. I have included some of the graphic screens with this article. The reference to J.R. in the descriptions, acknowledges the authorship of Jeremy Rushton.

In conclusion, I was very impressed with FSB. There were a couple of gripes, one serious, the other I put down to a lack of interest by the authors. The serious fault is the MANUAL. It is well printed, with adequate binding but it is very poorly edited and written. In fact, compared to other manuals, of similarly priced programs, it is very poor. To list all of the faults would be pointless, but I will cover some of them. If you think the manual with Atari LOGO was grim, as they say, you ain't seen nothin' yet. It should have contained a full description of all the keywords. It should have contained a greater proportion of examples, because there just is no other language to compare it to, to develop some skills from that source. There is, of course, the BBC text books, but they cannot be used blindly. In any case, one very important feature is GEM and this is absent on the Beeb. Similarly, to be able to utilise FSB to the full, a knowledge of 68000 programming is a must, this was almost non existent. I know there are lots of examples that I have just covered, they whet the appetite, give pointers, no more. Given time, all will be revealed. I ask you, is it good enough? Another gripe was the sound command, DOSOUND, it is pretty pathetic. To listen to what is possible, catch my earlier comments regarding START. Another gripe is 'What if you have a need to run TWO cartridges?' The reason I ask this question is because Computer Concept produce another cartridge based program, BACK PACK. This contains a number of very useful desk accessories, some of which would be very useful in the programmer's arsenal. This illustrates very poor planning by the two parties, Atari and CC. Atari, for putting the cartridge port on the side where it is very easy to touch the copper contacts. If this is done when the computer is on, it is very easy for a massive static charge to cause all the CMOS chips inside to have the 'trip' of a lifetime and go 'phut, phut, die'. Or, accidentally knock a cartridge in situ, and more nasties are released. But what facilities are there to allow more than one cartridge to run in parallel? This is CC's problem and all other cartridge software manufacturers. It will be very bad operating practice to simply keep pulling the cartridges in and out whenever they are required. On the old 800 series, the cartridge slot is on the top, with the contacts tucked safely away at the bottom of a little chamber which, in turn, was protected by a nifty trap door arrangement. This tried and tested method was abandoned on the ST for the sake of appearance, in favour of the sideways port. I believe that it is virtually impossible to insert a cartridge without exerting some damaging, lateral force, as well. On close examination, these contacts don't appear to be able to withstand too much of that type of pressure. I wonder if these problems will be resolved, I hope so!

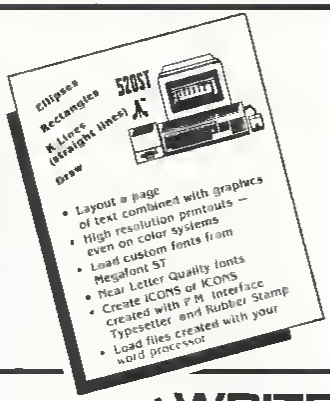
Apart from these gripes, I was very happy to examine this new language at first hand. The essential features of a good BASIC that I look for, concentrate on its working environment. Is it fun to use? The answer is, YES. Is it easy to use? The answer is, YES. Can I communicate easily with GEM? The answer is, YES. Is it fast? Not half!! Is it transportable? To a point, YES. Is it flexible? YES. Will it be good for beginners? YES. I would recommend it to all, including the Beeb book I mentioned earlier. Watch out for the Dealer offers that are circulating, you should be able to pick it up for a sum considerably cheaper than the RRP. Either way, it is still my number one recommendation for a good, multi-purpose, versatile language.



Typesetter Elite

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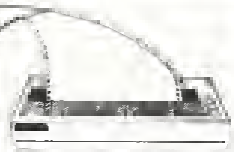
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WHIST

By Richard Watton

RUNS IN 48K CASSETTE OR DISK

Whist is a popular card game from which many other games have derived The simple game play is to win tricks against the computer You will be dealt thirteen cards, which are displayed face up A trump suit is designated and any card you have in your hand of this suit can be used to trump You can only trump however if you don t have a card of the same suit that was laid

You win tricks by laying a higher value card of the same suit, or by trumping. If you don t have a card of the suit which was laid and you don't have a card of the trump suit either, then you will have to 'through away' a card Usually a low value card is best. Aces, by the way, are the highest card not the lowest.

When all thirteen cards have been played, the winner is the one with the most tricks At the start of the game you can choose to lay the first card or you can let the computer go first Whoever wins the trick then lays the next card

Whist is a simple game but can be hours of fun for the family



```
RJ 10 GOTO 40
LT 11 REA **SUNT CARDS**
FJ 15 POKE 559,0:ST=2
SW 20 FOR STAT=( TO 4
CY 22 FOR VL=14 TO 2 STEP -1
SC 24 FOH I=ST TO 14
MX 26 IF C(I,0)=VL AMR C(I,1)=STST THEN G
   OSUB 30
KR 28 NEXT I:NEXT VL:NEXT STST:POKE 559,3
   4:RETURN
MY 30 C(I,0)=C(ST,0):C(I,()=C(ST,1)
EX 32 C(NT,0)=VL:C(NT,1)=STAT:ST=ST+1:AET
   URN
PE 40 DIM CL$(1),XX$(5),SPACE$(39):XX$(1
   )=CHR$(13):XX$(2)=CHR$(15):XX$(3)=XX$(
   2):XX$(4)=XX$(3):XX$(5)=CHR$((4)
PY 41 CL$=CAR$(125):FOR NA=1 TO 39:SPAC
   E$(NA)=" ":NEXT NA:NN(=1:GORUR 7000
KL 45 DIA A(53,1):DIN C(15,2):DIA D(15,2
   ):DIA E(6):DIN D$(9):DIM D$(9):CGAME=0:
   PGAME=0:NUMRN=0
FP 50 DATA 85,65,0,0,0,65,65,65
UH 51 DATA 85,150,150,(70,170,170,105,65
MG 52 DATA 85,65,20,20,20,65,65,85
SU 53 DATA 85,105,105,(70,170,105,105,65
GF 54 DATA 85,0,E(,81,81,81,65,1
DS 55 DATA 85,0,20,20,16,0,1,84
YQ 56 DATA 85,20,17,5,17,17,20,20
LC 57 DATA 85,65,20,20,0,20,20,20
ZP 58 DATA 85,1,65,65,65,65,0,0
DE 59 DATA 85,0,80,0,21,21,0,0
NR 60 DATA 85,0,84,84,64,84,84,0
KU 61 DATA 85,20,20,20,0,84,84,84
OL 62 DATA 85,0,21,0,84,84,0,0
AH 63 DATA 85,0,21,21,0,20,20,0
GA 64 DATA 85,0,84,84,84,84,84,84
ZE 65 DATA 85,0,20,20,0,20,20,0
BS 66 DATA 85,0,20,20,0,84,84,84
CC 67 DATR 85,0,20,20,20,20,20,0
BD 68 DATA 1,1,(,1,1,1,1,1
BU 69 DATR 64,64,64,64,64,64,64,64
AX 70 DATR 85,85,85,85,85,85,85,0,0,0
ME 73 FOR A=0 TO (023:POKE 25600+A,PEEK(5
   7344+A(:NEXT A
FZ 74 FOR A=472 TO 641:HEAD DAT:POKE 2560
   0+A,DRT:NEXT A
YK 75 POSITION 0,21:? " Press 'ESCAPE' to
    start"
HU 76 IF PEEK(764(<>28 THEN 76
GR 77 GOSUR 7200
EI 92 PLAYER=0:TNICKB=0:MYTRICKS=0:TAAP A
   0000:TRAP 92
JU 93 PORITION 2,17:? " Do you want to le
   ad?                 type 'YES' or 'N
   O'":INPUT C$
MP 94 PLAYEN=(
LT 95 IF C$(1,1)="Y" THEA PLAYEN=0
UR 96 ? CL$:LEAD=PLAYER
JY 98 NEM ****************
AQ 100 FOR INCN=2 TO 53
VG 120 CARD=CARD+1:IF CARD=15 THEN CARD=2
   :SUIT=SUIT+1
CR 130 A(1ACR,0)=CARD:A(INCR,1)=SUIT
SX (40 NEXT INCR
EO 146 REM **************
IY 149 AEA **SHUFFLE**
SU 150 FOR LOOP=1 TO 27
SZ 159 SOUND 0,10,8,10
JF 160 X=INT(52*RAD(1)+():Y=INT(52*RAD(1)
   +1):IF X=Y OR X=X0 OR Y=X0 THEN 160
WA 161 SOUND 0,0,0,0
UF 165 IF LOOP=13 THEN FOR T=0 TO 20:NEXT
    T
OA 170 IF X=Y THEN 160
RR 180 A1=A(X,0):B1=R(X,1):A2=A(Y,0):B2=A
   (Y,1)
AD 190 A(X,0)=A2:A(X,1)=B2:A(Y,0)=A1:A(Y,
   1(=B1:NEXT LOOP
QV 199 NEM ***********
NE 200 NEM **REAL**
TB 220 FOR INCR=2 TO 26 STEP 2
WT 230 C(INCR/2,0)=A(IACN,0):REM *CARD*
BD 240 C(INCH/2,1)=A(INCR,1):REA *SUIT*
HN 245 AEXT IACN
VK 246 FOR INCR=3 TO 29 RTEP 2
HN 250 D((INCR-11/2,0)=A(INCH,0):NEM *CAR
   D*
BV 260 D((INCR-1)/2,1)=A(INCH,1):REM *SUI
   T*
NE 270 NEXT INCA
RC 280 TRUMPS=A(29,1)
VI 284 GOSUB 15
TP 288 GOSUB 5000
TJ 290 REA ***RAME***
AE 299 REA **********
EV 300 LOOP=1
AP 30( LOOP=LOOP+1:IF LOOP=15 THEN 4000
YC 302 IF C(LOOP,0)>0 THEN 310
AX 303 RDTO 301
AI 310 PDSITIDA 2,18:? "Press 'ESCAPE' to
   continue "
JQ 311 IF PEEK(764)<>28 THEN 311
UZ 315 GOSUB 7300
DE 329 IF PLAYER=1 THEN 2500
UV 350 PORITIDA 0,17:? "Your moves input
   a card and its suit"
UN 355 GOSUB 3500
ES 358 AEM **************
AB 359 NEA **LOCATE CARD PLAYED**
RW 360 IACN=1
LH 365 INCR=INCH+1:IF INCR=(5 THER 400
```

```
NI 370 IF C(INCN,0)=CARD AND C(INCN,I)=SU
   IT THER 500
RD 390 GOTO 365
KF 395 GOTO 1000
UJ 400 GOSUB 7300
HR 410 POSITION 0,17:? "  You can't do th
   at!"[SPACE$(NN1,22)
PQ 420 FOR T=0 TO 350:NEXT T:GOTO 350
RT 5NN MOSUB ANN0
RS 998 RER ++++++++++++++++
OG 1000 RER ++++++++++++++++
SV 1010 E(1)=CARD:E(2)=SUIT
XR 1025 REN **REMOVE THESE CAROS FROM HAN
   D**
QU 1026 C(INCR,0)=0:C(INCR,1)=0
US 1029 REM ++++++++++++++++
XN 1029 REN **COMPUTER TO PLAY**
VJ 1030 E(3)=0
XH 1040 GOSUB 2000
BZ 1045 E(4)=E(2)
IR 1050 IF E(3)>0 THEK TRICKS=TRICKS+1:PL
   AYER=1:GOTO 2400
YA 1060 GOSUB 2100
TF 1065 E(4)=E(2)
ER 1070 IF E(3)>0 THEN NYTRICKS=NYTRICKS+
   1:PLAYER=0:GOTO 2400
YT 1080 GOSUB 2200
PN 1090 GOTO 2400
NZ 1999 NEM ++++++++++++++++++
FJ 2000 NEM **COMP.TO PLAY HISHER CARD**
IX 20NC INCR=1
XV 2010 INCR=INCR+1:IF INCR=15 THEN RETUR
   N
BQ 2015 IF O(INCR,1)<>E(2) THEK 2010
EC 2N20 IF E(3)=0 AND O(INCR,0)>E(1) THEN
   E(3)=O(INCR,0):SOTO 2010
BM 2030 IF E(3)>D(INCR,0) AND D(INCR,0)>E
   (1) THEK E(3)=O(INCR,0):GOTO 2010
NZ 2040 SOTO 2010
RJ 2099 REK ++++++++++++++++++
LF 2100 RER **COMP.TO PLAY LORER CARD**
IY 2110 INCR=1
YA 2120 INCR=INCR+1:IF INCR=15 THEN RETUR
   R
DK 2130 IF D(INCR,I)<>E(2) TREN 2120
SX 2140 IF E(3)=0 AND O(INCR,0)<E(1) 1HEN
   E(3)=O(INCR,N):GOTO 2120
EH 2150 IF E(3)>O(INCR,0) AND O(INCR,0)<E
   (1) THEK E(3)=O(INCR,0):GOTO 2120
PS 2160 GOTO 2120
NK 2199 REN ++++++++++++++++++
AS 2200 REN **COMP.TO TRUNP OR THRON AWAY
   **
1E 2210 RARO=9*RRD(1)
US 2215 FLAR=0
RR 2220 IF NAKD<5 THEN 2300
NE 2230 REN **CORP.1HRONG ARAY**
AJ 2240 IRCR=I
VO 2250 IRCR=INCR+1:IF INCR=15 THER 2291
QS 2260 IF D(INCR,1)=TRUMPS ON O(IRCR,1)=
   N THEN 2250
OC 2270 IF E(3)=0 THER E(3)=O(INCR,0):E(4
   )=O(INCR,1):GOTO 2250
OH 2280 IF E(3)>O(INCR,0) THEN E(3)=O(IRC
   R,N):E(4)=N(INCR,1):NOIO 2250
RQ 2290 GOTO 2250
RU 2291 IF E(3)>0 1HEN NYTRICKS=RYTRICKS+
   1:PLAYER=0:RETURN
LU 2292 FLAG=FLAG+1:IF FLAG=2 THER RETURN
NN 2299 RER ++++++++++++++++++
HH 2300 RER **CARP.TRUNPS**
BU 2310 INCR=1:E(4)=TRUMPS
GL 2320 INCR=INCR+1:IF INCR=15 THEN 2370
BR 2330 IF O(INCR,I)<>TNURPS OR O(INCH,1)
   =0 THER 2320
YG 2340 IF E(3)=0 1HEN E(3)=O(INCR,0):GOI
   O 2320
OR 2350 IF E(3))O(INCR,0) 1NER E(3)=O(INC
   R,0):SOTO 2320
QI 2360 SOTO 2320
BK 2370 IF E(3))0 THEN TRICKS=TRICKS+1:PL
   AYER=1:RETURN
LN 2371 FLAG=FLAR+1:IF FLAG=2 THEN RETURR
RC 2380 GOTO 2240
NO 2399 REN ++++++++++++++++++
ZR 2400 REN **COMP.PLAYS CARD**
BI 2410 SOGUB 3800
TI 2420 REN **REMOVE CARD FROM NATR1X**
AK 2430 INCR=I
JA 2440 INCR=INCR+1:IF O(INCR,0)=E(3) AKD
   O(IRCR,I)=E(4) THEN 2450
CZ 244I IF INCR=15 THEN END
SK 2445 GOTO 2440
PK 2450 O(INCR,0)=0:O(IRCR,1)=0
XA 2490 GOTO 2990
BN 2499 REN ++++++++++++++++++
YZ 2500 NEN **COMPUIER TO PLAY FIRGT**
CV 2510 INCR=1:E(3)=0
NY 2520 INCR=INCR+1:IF INCR=15 THEN 2600
TN 2530 IF O(IRCR,I)=TRUMPS THER 2520
CN 2540 IF E(3)=0 THEN E(3)=O(INCR,0):E(4
   )=O(INCR,1):GOTO 2520
ZL 2550 IF O(INCR,0)>E(3) THEK E(3)=O(INC
   R,0):E(4)=O(INCR,1):SOTO 2520
BK 2560 GOTO 2520
OY 2600 INCR=I:E(5)=0
OG 2610 INCR=INCR+1:IF INCR=15 THEN 2700
AU 2620 IF O(IRCR,1)<>1RUMPS THER 2610
EE 2630 IF E(5)=0 THER E(5)=O(1KCR,0):GOT
   O 261N
MP 264N IF O(INCR,N)>E(5) THEN E(5)=O(INC
   R,0):GOID 2610
RJ 2650 SOTO 2610
UR 270N IF E(5)>E(3) THEN E(3)=E(5):E(4)=
   TRUMPS
AQ 2710 IF E(3)=0 THEN 6000
AN 2720 INCR=1
QE 2730 IRCR=INCR+1:IF O(INCR,0)=E(3) AND
   O(INCR,()=E(4) 1HEN 2750
ST 2740 SOTO 2730
PS 2750 O(INCR,0)=0:O(INCR,I)=0
CD 2760 SOSUB 3800
VO 2761 GOTO 2770
NX 2765 REN ++++++++++++++++++
CI 2766 RER **PLAYER TO FOLLOW**
EK 2767 POSITION 0,18:? "  You can't do t
   hat!          "[POSITION 0,19:? SPACE$
   (NN1,24)
NV 2768 POSITION 0,20:? SPACE$(NK1,14)
UT 2769 FOR T=0 TO 100:NEXT T:TAAP 48000:
   TRAP 2767
EK 2770 POSITION 2,18:? "Input a carR anR
    ita ault"[SPACE$(NNI,17):SOSUB 3500:1
   RAP 48000:TRAP 2767
IR 2771 IRCR=1:FLAG1=0
UQ 2772 IF SUIT=E(4) THER 2777
DA 2773 INCR=INCR+1:IF FLAG1=I THEN 2767
EH 2774 IF INCR=15 ANO FLAGI=0 THEN 2761
GB 2775 IF C(INCR,I)=E(4) THEK FLAGI=I
XU 2776 GOTO 2773
CE 2777 INCR=1
IR 2778 IRCR=INCR+1:IF INCR=15 THER 2767
GA 2779 IF C(INCR,0)=CAND ARO C(INCR,I)=S
   UIT 1HEN 2781
IN 2780 GOTO 2778
BK 2781 REN **REMOVE THESE CANDS FNOM NA1
   RI**
6I 2790 IRCR=1
XD 2900 INCR=IRCR+1
EI 2810 IF C(INCR,N)=CARD AND C(INCR,I)=S
   UIT THEN 2N3N
RO 2820 GOTO 2800
OG 2830 C(INCR,0)=0:C(1RCR,1)=0
IN 2835 SOSUB 4000
XU 2839 REM ++++++++++++++++++++
VB 2840 REN **DECIDE NHO TAKES TRICK**
HO 2850 IF SUIT=TRUMPS AND E(4)=1RUMPS 1H
   EN 2870
EN 2855 IF SUIT=TRURPS AND E(4)<>TRUMPS T
   HEN NYTRICKS=NYTRICKS+1:PLAYER=0:GOTO
   2990
MF 2860 IF SUIT<>E(4) THEN TRICKS=TRICKS+
   1:PLAYER=1:GOIO 2990
EP 2870 IF CARD<E(3) THEN 1RICKS=TRICKS+1
   :PLAYER=1:GOTO 2990
RV 2880 IF CARD>E(3) 1HEN NYTRICKS=NYTRIC
   KS+1:PLAYER=0:GOTO 2990
CK 2990 SOGUB 7300
UL 2992 POSITION 0,17:? "      Tricks are
   "[NYTRICKS,TRICKN
OC 2995 GOTO 300
GB 3490 REN **INPUT CARD AND SUIT AS GTOI
   R0**
XB 3491 POSITION 0,19:? "  Try again"[SPA
   CE$(NN1,28)
ZN 3492 POSITION 0,20:? GPACE$(RN(,27):PO
   SITION 0,21:? SPACE(NN1,16):FOR I=0 TO
   50:NEXT T
LR 3493 POSITION 0,19:? SPACE$(NNI,20):IF
    PLAYER=1 THEN POSITION 2,18:? "Input
   a carR and ita ault"
RD 3494 FOR I=0 TO 15:NEXT T
NR 3500 1RAP 40000:TRAP 3550
QG 3509 POSITION 2,19:1RPUT C$,O$
YQ 3510 CARD=VAL(C$):GOTO 3600
SA 3550 TRAP 40000:TRAP 3491
GV 3551 IF C$(1,1)="J" THEN CARO=11
RN 3560 IF C$(1,1)="Q" 1HEN CARD=12
UB 3570 IF C$(1,1)="K" 1HEN CARD=13
OM 3580 IF C$(1,I)="A" 1HEN CARD=14
HJ 360N IF O$(I,I)="S" THER SUIT=1
BB 3610 IF N$(1,1)="R" THER SUIT=2
YI 3620 IF D$(1,1)="C" THEN SUIT=3
AI 3630 IF D$(1,1)="O" THER GUIT=4
AI 3640 RETURN
QO 3900 REN **DISPLAY COMPUTERS CAROS**
KO 3910 C$=STR$(E(3))
WN 3920 IF E(3)=11 THEK C$="JACK"
1O 3921 IF E(3)=12 THEK C$="QUEER"
PA 3922 IF E(3)=13 THEN C$="KIRG"
NI 3923 IF E(3)=14 THEN C$="ACE"
VN 3930 IF E(4)=1 THER O$="SPADE$"
GK 3931 IF E(4)=2 THEN D$="HEART$"
SQ 3932 IF E(4)=3 THER O$="CLUBS"
VB 3933 IF E(4)=4 THER D$="DIAMONDS"
6I 3950 GOSUB 7300
CW 3952 POSITION 0,17:? "  I play the "[
   C$]" of "[O$:SPACE$(RR1,20)
XR 3957 FOR T=0 TO 10:NEXT T:IF PLAYER=1
   THEN RETURR
RA 3959 FOR T=0 TO (00:NEXT T:RETURN
FQ 3999 RER **RE-ORAN HRND**
VG 4000 XPOS=0:YPOS=0:LOOP=1
```

```
HI 4010 LOOP=LOOP+1
FE 4020 IF LOOP=1RCR THEN 4100
OY 4030 XPOS=XPOS+5:IF XPOS>34 THEN XPOS=
   2:YPOS=6
OX 4040 SOTO 4010
ZC 4100 POSITION XPOS,YPOS:? "     "
OP 4110 POSITION XPOS,YPOS+1:? "     ":PO
   SITION XPOS,YPOS+2:? "     ":POSXTION
   XPOS,YPOS+3:? "     "
ZI 4115 SOUNS 0,5,8,10
OI 4120 POSITION XPOS,YPOS+4:? "     "
ID 4125 SOUND 0,0,0,0
AS 4200 RETURN
KF 4999 REM **DRAN HANO**
JI 5000 XPOS=0:YPOS=0:FOR LOOP=2 TO 14
ZT 5009 R=C(LOOP,0)
RN 5010 IF R=0 THEN C$=CHR$(12)
NY 5011 XF R=1 TNER C$=CHR$(3)
PN 5012 IF R=2 THEN C$=CHR$(4I
NC 5013 XF R=3 THEN C$=CHR$(5)
BR 5014 IF R=4 THEN C$=CHR$(6)
US 5015 XF R=5 THEN C$=CHR$(7)
VV 5016 IF R=6 THEN C$=CHR$(9)
XK 5017 IF R=7 THER C$=CHR$(9I
PK 5018 IF R=8 THER C$=CHR$(10)
NR 5019 IF R=9 THEN C$=CHR$(11)
BO 5020 IF R=10 THEN C$=CHR$(3I:C$(2,2)=C
   HR$(1)I
BY 5021 IF R=11 THEN C$=CHR$(95)
RO 5022 IF R=12 THEN C$=CHR$(0I
TF 5023 IF R=13 THEN C$=CHR$(1)
UR 5024 IF R=14 THEN C$=CHR$(2)
OB 5030 H=C(LOOP,1):IF R=I THEN D$=CHR$(9
   1)
WU 5031 XF R=2 THEN D$=CHR$(92)
YK 5032 IF R=3 THEN D$=CNR$(93)
AA 5033 IF R=4 THEN D$=CHR$(94I
SZ 5040 IF LOOP=9 THEN YPOS=YPOS+6:XPOS=2
DN 5050 POSITION XPOS,YPOS:? XI$
OO 5051 POSITION XPOS+1,YPOS:? C$
AB 5052 POSITION XPOS,YPOS+1:? XI$
01 5054 POSITION XPOS,YPOS+2:? XI$
CB 5056 POSITION XPOS+2,YPOS+2:? D$
CX 5058 POSITION XPOS,YPOS+3:? XI$
CT 5060 POSITION XPOS,YPOS+4:? XI$
10 5061 SOUNC 0,10,0,10
EK 5062 POSITION XPOS+3,YPOS+4:? D$
YW 5080 XPOS=XPOS+5
JI 5089 SOUND 0,0,0,0
NC 5090 REXT LOOP
MJ 5100 IF TRUNPS=1 THEN O$="SPADES"
IX 5101 IF TRUNPS=2 THEN O$="HEARTS"
EF 5102 IF TRUNPS=3 THEN O$="CLUBS"
XE 5103 IF TRUNPS=4 THEN O$="DIAMONDS"
YJ 5110 POSITION 3,14:? "TRUMPS are "|O$
FZ 5120 SETCOLOR 2,0,0
AO 5130 RETUNN
OR 6000 KER ****COMPUTEN LOSES*****
MG 6001 ? CLS$
11 6002 POSITION 2,10
VN 6010 IF NYTRICK0>TRICKS THER ? "You ha
   ve "|NYTRICK5|" tricks: YOU NIH":PSAME
   =PBARE+1
VR 6020 IF TRICKS>NYTRICKS THEN ? "You ha
   ve only "|NYTRICK5|" tricks: [ NIR":C0
   RME=CSANE+1
VO 6021 ? NUMER|" game"|:IF NUMSN>1 THEN
   ? "s"|
WN 6322 ? " Nlayed, "|
CI 6023 IF CSANE>PGRME THER ? "I lead My
   "|CSAME-PSANE|" game"|:IF CSANE-PSANE>
   1 THEN ? "s"
KF 6024 IF PSAME>CSAHE THEN ? "You lead M
   y "|PSANE-CSAME|" game"|:IF PSANE-CSAR
   E>1 THEN ? "s"
GN 6026 IF CSANE=PGAME THEN ? "Games leve
   l at "|CSRNE|" game"|:IF CSANE>1 THER
   ? "s"|
NI 6028 IF CSAME=PGNME THER ? " all"
HC 6030 ? :? "Press  ESCAPE  to continue"
GI 6040 POKE 764,255
IG 6059 IF PEEK(764)<>28 THEN 6050
OG 6051 ? CLS$:GOSUG 7200:POBITION 2,17
GM 6052 IF LEAO=0 THEN LEAO=1:? "Ry Xead
   this time":SOTO 6060
8X 6055 IF LERD=1 THER LEAD=0:? "Your Xea
   d this tiss"
VE 6060 PLAYER=LEAO
JV 6070 ? "Prase  ESCAPE' to continus":PO
   KE 764,255
ML 6080 IF PEEK(764I<>28 THEN 6080
UT 6090 POKE 764,255:TRICKS=0:NYTRICKS=0:
   ? CLS$:SOTO 110
PE 7000 BRAPHICS 0:POKE 752,1:SETCOLOR 2,
   0,0:? CLS$
QZ 7010 POSITION 10,0:? "RHIST (C) R.WATT
   ON"
KR 7020 POSITION 2,5:? "Input ths CARO sn
   d 6UIT you wish to     plsy as follows
   :"
KN 7030 POSITION 2,9:? "Example"
VP 7040 POSITION 2,11:? " ? K1R9"
NO 7050 POSITION 2,12:? " ? CLUB5"
OI 7060 POSITION 2,14:? " ? 3"
SI 7070 POSITION 2,15:? " ? HEARTS"
TH 7080 POSITION 2,17:? " ? 3"
PC 7090 POSITION 2,18:? " ? H"
AO 7091 POSITION 2,20:? "(Press  RETURR
   after all sntries!"
VC 7092 POSITION 0,21:? "Please asit.....
   ..."
AH 7100 RETUNH
RC 7200 ? CLS$:OLIST=PEEK(560I+256*PEEK(5
   61)
NR 7210 POKE OLIST+3,68
LB 7220 FOR N=6 TO 17:POKE OLIST+R,4:NEXT
   R
AA 7230 POKE 756,100
RY 7240 POKE 708,10:POKE 709,56
FC 7250 ? CLS$:POKE 752,1
NR 72A0 CAND=1:SUIT=1:NUMSN=NUMSR+1
RE 7270 RETURN
XS 7299 REM 40 BLANK SPACES IN FOLLORING
   LIRES
BP 7300 FOR XI=17 TO 21:POSITION 0,XI:PRX
   NT $PACES(NN1,39):NEXT XI
B0 7350 RETURN
```

DOS Modifications

By Bruno Andrighetto
Reprinted from Feedback

For DOS users wanting to increase their range of legal filenames, you can modify DOS to suit your needs You can also change the characters for wildcards

The normal range of legal characters are the letters A Z (upper case) and the numbers 0 9. The wildcard for multiple characters is the asterisk (*), and the question mark (?) is the wildcard for single characters

After examining and comparing DOS 2 0s and DOS 2 5 (XL) I found the memory locations controlling the parameters shown in Table 1 To change these parameters you POKE these memory locations with the desired values

For example, if the first range of characters was to include lower case characters then you should POKE location 3822 (DOS 2 0s) or location 3778 (DOS 2.5) with the ASCII value for the character following z', i e 123 This will allow any character having an ASCII value between 65 and 122 in your filenames, including the underline character

To save these modifications just go to DOS and choose option H (Wnte new DOS files) Note if you require functional wildcards they must have an ASCII value outside any new ranges you create Also take care with ranges that involve cursor control characters, EOL (return), space and double quotes

	DOS 2 0s	DOS 2 5(XL)	Default Value
Start range A Z	3818	3774	A , ASCII 65
End range A-Z	3822	3778	[, ASCII 91
Start range 0 9	3830	3764	0 , ASCII 48
End range 0-9	3834	3768	, ASCII 58
Wildcard *	3783	3747	* , ASCII 42
Wildcard ?	3787	3751	? , ASCII 63

Table 1.

OPERATING SYSTEM CONTROLLER CARD

From Computer House.
(Printer required)
Atari XL £59 99
Atari XE £79 99
Reviewed by Matthew Tydeman

The 1986 Christmas Atari Show saw many new products, in some cases from new companies making their debut in the ever growing field of Atari Computer House is one of these such companies and one which specialises in hardware design and development Their first product, the Operating System Controller Card brings added power to your Atari 800XL or your Atari 130XE

Computer House's 'State of the art' development, allows dual operating systems to lie resident within your machine Your original Atari OS remains intact while the secondary operating system can be called in when required or be set to a permanent operating system

The Controller Card Operating System is programmable by the user which allows great flexibility and potential for special Operating Systems for different tasks to be created easily and simply from Basic or from special Utility Disks provided in a series by Computer House

Installation

The Controller Card Operating System is a small board which is installed over the existing Motherboard of the XL and XE computers The Controller Card obviously requires your machine to be opened, which does void any warranty you may have on your machine. Earlier XL computers luckily have their 16 pin (74LS138) and 20 pin address decoder chips socketed, which allows easy removal of these two chips and even easier installation of the new board However, if you own a relatively new machine or an XE computer, you face a more complicated installation routine These machines have their decoding chips soldered directly to the Motherboard and require both the 16 pin and the 20 pin chips to be desoldered This is a hard task even at the best of times and really needs a true solder station or a friend who can help hold the board in an adequate access position, in order to ease the chips out once heat has been applied to each pin.

Computer House are offering to install the board free of charge to anyone not skilled enough to open up their machine and perform the installation for themselves, but require payment of return postage and insurance which is fair enough.

When installing the Controller board in my soldered 800XL computer, I encountered a few minor problems which the installation guide doesn't mention I found that the custom designed Controller board was a bit of a tight fit if your chips are soldered, due to the fact that the board actually lies lower than it would if it were socketed, which is the assumed standard, and so comes into contact with the POKEY chip and timing capacitors which surround the Controller board To over come this problem I trimmed off one edge of the board which forced me to break one connecting track. I am aware however that the board has been slightly redesigned since this review and that a clean installation is now possible whichever machine you own If however the thought of desoldering and trimming does somewhat change your eagerness to open your machine and install the board yourself, think again and consider Computer House's free installation.

Features

With the board now installed one can get down to actually using some of the power the Controller card has hidden within Depending upon how you have set up up your Controller card on installation, determines how the Controller card operates. Computer House sell an optional extra to the OS Controller Card which allows switching in of different set ups with the use of a switch This switching process can be achieved equally as well by changing six switching links on the Controller board itself These switches allow numerous variations including Board Lock when the new OS has been programmed one can set this to OFF and the OS then remains unchangeable until the switch is returned to the ON position Permanent RAM converts the Controller cards ROM to RAM which enables saving of the OS to disk for total customisation of the OS, Controller Card Control allows programming of the OS with one of the Utility diskettes, Atari OS simply switches off the Controller card and leaves the Atari OS intact, Basic Disable will totally avoid initialization of the Basic ROM, while Basic Control does the opposite and will enable it if requested by OPTION

However you set-up your Controller card on installation it still lies open to extensive programming With the Utility diskette supplied with the card one can begin to dabble with some of the simple options available.

While some of these facilities are not everyday routines, they are at some stage handy to have and use, and in some cases very useful not only to the experienced programmer but to the beginner Such facilities as default colour selection, programmable cassette baud rates, flashing cursor with variable speeds, and auto scroll of text come as a few user definable options which can be set and saved to appear as default on many programs As the Controller card is invisible to the majority of programs (including CDY's Omnimon and Computer Supports Ultimon! which incidentally can be run alongside the Controller card), no interference should be encountered leaving your preset options intact during every program

A more complex feature found on the Utility diskette is the Operating System menu. Here it is possible to dump the contents of the computers memory while a program is running to disk simply by pressing the HELP key as well as the dumped code being easy to understand and debug if necessary, a short loader is saved which allows you to re install the memory saved at a later date at the same place you saved it from Once the memory has been saved to disk your program which was previously interrupted will continue from the point it was originally stopped with the true Operating System relinquishing control This feature will even save out to disk the Omnimon and Ultimon! Operating Systems

Those familiar with the popular Multiboot menu program written by John Williams will benefit from a nice feature contained within the Controller card This XL Boot menu option updates an existing Multiboot disk by rewriting a shorter, faster loading master menu disk It is also possible to save this actual routine as a Multiboot loadable file in order to leave the useful utility options (Option X) still operational

An option I liked using was the I/O Analyser which, when initialised using the Utility disk, constantly records to your printer the status of the drive and computer Information is constantly updated and can be preselected in order to pick out only the relevant details

THE O·S· CONTROLLER CARD

HARDWARE

The O S Controller Card is a state of the art hardware board which allows you to have two operating systems in your XL/XE Computer One of the standard Atari O S the other is programmable The product has been designed to a) be extremely cost effective as I allow you the necessity to purchase new Eproms every time you want a new utility (of course this is assuming that someone is even prodiucing an Eprom with that utility that you require)
b) be easy to use – no programming knowledge at all is required to use the O S Controller Card
c) allow enormous flexibility and power to the point that the user may create a completely new operating system for the computer – even turn Basic
d) be totally compatible with existing software and be easily up-dated if required

UTILITY DISK #1

This is the first of many utility disks and offers a host of utilities to get you started in the world of O S customizing

1) THE SNAPSHOT PRINTER DUMPER: – at the touch of a button this will accurately reproduce whatever is on your screen to your printer in full A4 size when the dump is complete your program will continue where you left off Besides the normal dump quality we have included our unique SHQ™ mode this is not to be seen to be believed There is also a mode similar to SHQ™ that compensates for printers with inaccurate line feeds (Epson & Compatibles)

2) THE DUMPER: – an ideal utility to upgrade all your cassette software to disk or make disk to disk backups The Dumper is not affected by any cass/disk protection at all The Dumper can be activated separately through out your program making it ideal for software that has no save game option

3) O S. BOOT MENU: – a multiboot compatible menu that's O S resident simply press the HELP key and you are instantly back at the menu now either load a new title or press system reset and you are back to the beginning of your previous program

4) I/O ANALYZER: While you are loading a boot disk the I/O analyzer will constantly send updated information to the printer about the drive and the computer

5) There are also such features to change the master O S character set switch on or off auto scroll noisy I/O key click inverse flash last cursor after the primary cursor defaults and lock them save any old XL/XE O S with or without customised ROMS

CONTINUED SUPPORT

1029 Snapshot Dumper £12 95
SHQ Printer Link £14 95 (This will give you the SHQ linen lo graphics program like Typesetter)
Ultraspeed Handler T.B.A.
Dumper Toolkit T.B.A.

INSTALLATION

Installing the O S Controller Card yourself will require the insertion of 2 IC sockets and the soldering of 1 wire alternatively have it installed by us free of charge but please add £5 50 p&p and ins (pack securely)

D.S. SWITCH PACK

The O S switch pack is an optional extra that when added to the O S Controller Card will give the you following features
1) Switch Basic on and off instantly
2) Switch the Reset lock on and off With this switch on the O S Controller Card cannot be reprogrammed thus alleviating any accidental tampering with your customised O S by other software
3) Switch between the Atari O S the Customised O S and the Permanent Ram O S even while your software is running

MAIL ORDER ONLY

PRICE LIST

O S CONTROLLER CARD FOR THE 800XL COMPUTER	£69 95
O S CONTROLLER CARD FOR THE 130XE COMPUTER	£79 95
OPTIONAL O S SWITCH PACK	£ 9 95
RETURN P&P & INSURANCE IF INSTALLED THROUGH COMPUTER HOUSE	£ 5 50

CHEQUES/POSTAL ORDERS SHOULD BE MADE PAYABLE TO :
COMPUTER HOUSE (Partnership) 'THE IMAGINATION STATION'
TEL: 01-731-1276
ADDRESS: 14 Romily Court, Landridge Road, Fulham, LONDON SW6 4LL

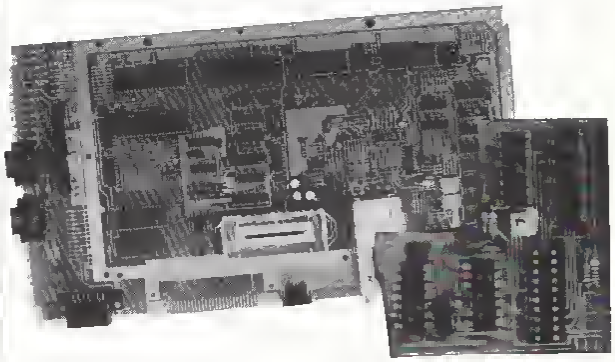
required from the analysis. Now it is possible to find out where disk status is being requested from, Command and Hardware status can be printed together with information on boot sectors and memory locations used by the program currently being tested. It is possible to temporarily pause the print out.

While all this is very useful, many of these features can already be found in many stand-alone programs, the Controller card just holds them constantly in memory for instant implementation. The Controller card however has one extremely unique and useful feature never seen before. At the touch of a button the Snapshot printer dumper allows a very high resolution full A4 screen dump to be made of whatever is on the screen to any printer including the Atari 1029. Three primary versions of the dump are available, Draft Quality Snapshot is a very fast high definition single pass screen dump. SHQ Quality Snapshot is Computer House's unique graphics version of NLQ and must really be seen to be believed, it is that good. HQ Quality Snapshot is of similar quality to that of SHQ but has full compensation for those printers with unreliable and inaccurate line feeds, namely Epson's and their compatibles.

It is hard to really think of a real dedicated use for the program. It isn't something like Ultimon which has a specialised use, but the Controller card does seem to fall into this league very well, the special screen dump routine seems to be an added bonus – but a great bonus which has the potential to be marketed as a totally separate product.

It takes time to get used to having the Controller card there and to get to know the workings and control of the card. One feature not mentioned in the current manual is that the Controller card removes the annoyance of the boot up time of the XL/XE computers. When you switch the machine on with a Controller card installed you have an instant boot, identical to that of the late 800 machine instead of crashed memory or a 10 second pause.

Any upgrades will become available to the registered user and special Hint and Tip sheets are available for each Utility disk, giving ideas as to how to get the most from your new Controller card. At present only one disk is available, but further disks are already under development. The price difference between the XL and XE versions is due to a customised cable on the XE version which has been independently manufactured.



2 BIT SYSTEMS: MUSIC PRODUCTS FOR THE 48K ATARI

REPLAY

Replay is a complete sound sampling system that allows you to produce real speech music on any 8-bit ATARI.

Features:
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- Sample playback through TV/Monitor
- Allows samples to be used in your own Basic programs
- Supplied on cartridge, no user memory lost
- Records from Hi Fi or external recorder
- New V2.0 Replay program with bigger option

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Digidrum: Digital drum sequencer (no hardware required) allows you to create your own Drum rhythms using 8 sampled drum sounds.

Digisynth: Simple sample sequencer (no hardware required) allows you to play tunes using sampled sounds (dog barks, guitars, voices etc.)

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REPLAY system (cartridge software, Digidrum and Digisynth) only £39.95

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Features.
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- CZ menu and split program

NB. We will be producing other voice editors for different synths as and you own a different synth get in touch.

FUTURE RELEASES
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PERCUSSION MASTER

A high quality professional drum kit at the ATARI.

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- Includes digital echo program for use with the REPLAY cartridge

- 3 Channel polyphonic
- 100 Song entries
- Audio output via hi-fi

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DIGIDRUM II

A digital drum machine sample sequencer that requires no extra hardware.

Features:
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- 2 Channel polyphonic (only two drums)
- 100 Song entries (with complex looping)
- 32 Patterns (4-32 beats/bar)

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Atari PC

The audience at a press conference at the CES show in Las Vegas was stunned to learn that Atari Corp are planning to market an IBM PC compatible machine Industry outsiders however, were quick to point out that Atari has always been known for bringing state-of-the art products to market at low prices and for staking out new turf In this context, it is less surprising that Atari has chosen to bring their special brand of competition where, for the moment, the competition is hottest

Presently, the PC compatible industry is moving in two directions At the low end a group of more-or-less anonymous clone makers are packaging 'bare bones systems for the mail order market. Buyers of such machines often find that they must add several hundred dollars worth of extra hardware before their bargain systems can accomplish useful work At the high end, clone makers such as Leading Edge and Compaq are providing more complete systems than IBM itself At prices starting at around $1200 and up, however these machines can only be considered bargains in comparison with the even higher cost of going with Big Blue

In designing their PC, Atari management decided to run counter to both dominant trends Instead, they reasoned that by applying new technology and old fashioned manufacturing leverage, they could bring to market a fully loaded, up-to-date system, a here's everything you ll ever need PC, at a price low enough to undercut even the el cheapo clone makers

They appear to have succeeded The Atari PC, which will retail for around $500, is a compact and elegant system loaded with features not found on systems costing literally thousands of dollars more. Measuring about 22 inches square by only 2 inches high the Atari PC system unit includes a built-in, half height 5 1/4 inch disk drive and integral power supply An XT style keyboard attaches to the unit via a coiled cable A second 5 1/4 inch drive or ST style 3 1/2 inch drive, capable of reading disks in either ST or IBM format can be attached externally But that's just the beginning

The Atari PC comes with 512K of RAM, expandable to 640K via sockets on the motherboard Standard serial, parallel, and combination video ports, and an ST style disk port, are all included A mouse port, based on the Microsoft INPORT chip is built in, and an ST type mouse is included with the system Thus unlike competing PC compatible systems the Atari PC will be able to run PC GEM, Microsoft windows and mouse based programs like Microsoft Word

The Atari PC employs an Intel 8086 microprocessor which can run at 4 77 MHz and in an enhanced 8 MHz turbo mode An 8087 math coprocessor, running at either speed, can be added via a socket on the motherboard

As one would expect, Atari has paid special attention to its graphical capabilities Most low cost PC's support only the IBM monochrome mode, and are thus text only systems A few of the more expensive clones include IBM Colour Graphics Adaptor (CGA) and/or Hercules monochrome graphics capabilities IBM Enhanced Graphics Adaptor (EGA) 640 x 350 x 16 colour graphics capability have, in the past, only been accessible via expensive upgrades to a system's display circuitry and the purchase of costly high resolution monitors

Atari has managed to shoehorn IBM monochrome, CGA, EGA, and Hercules graphics into the Atari PC Atari's Shiraz Shivji explained that Atari's EGA is completely downward compatible with CGA As a result, users will experience no compatability problems when using the lower graphics modes What's more Atari have announced a $200 monochrome greenscreen monitor for use with the PC that can display all its graphics modes, including EGA colour mode using intensity gradients (grey scales) to represent colours The monitor is intelligent and can recognise the frequency of signals coming from the combination video port adjusting itself to display whatever kind of graphics the machine produces

Editors Note This article was taken from Atari's own BBS in the USA. The market situation is of course different in this country, Amstrad springs to mind here Nevertheless its interesting to see the reasoning behind Atari's move into the IBM marketplace.

Software on the way!

Coming from Microdeal is Gold Runner, an exciting arcade style game sporting tremendous graphics for ST users You must guide your ship through the Ring Worlds of Triton to prepare the way for the massed fleets of humanity who are fleeing the destruction of the Earth Recommended price to be £24 95 Also from Microdeal are Zoomracks II, Techmate Chess and ST Digidrum (ex 2 Bit Systems)

US Gold are releasing many of the S S I war games throughout March These include Broadsides, Gettysburg, Mech Brigade Carrier Force, Panzer Grenadier, Colonial Conquest and Computer Ambush, all on disk and priced between £25 to £30 Also due out is a Wargame Construction Set for £19 99

Rainbird are launching Guild of Thieves on their Magnetic Scrolls label It features a large number of complex puzzles and 30 illustrations of similar quality to the Pawn Guild of Thieves is scheduled for an end of April release on the ST and will be available on the 8 bit during May The ST disk will be £24 95, the 8 bit disk probably £19 95

Mastertronic have a new label for 8 bit releases called Bulldog Due out in March will be Colony at the usual budget



price. Also keep an eye out for another Mastertronic release called Amaurote.

Precision Software unveiled its ST version of Superbase Personal at the Hanover Fair. It retails for £99.95 and is a powerful database that has no limits on the number of fields or on the size of records. It also has graphics management capabilities which allow pictures to be retrieved and displayed, and there is a built-in automatic slide show picture sequence.

Aegis Development Inc. in Santa Monica have released Animator ST which is a 'Metamorphic Cel Animation System'. It uses a concept known as tweening to control the movement of objects during animation. Metamorphic animation lets you create objects and change them easily, i.e. changing a pyramid into a star. Cels created in Neochrome can be loaded and displayed to give the illusion of movement.

Future Releases

Futureware, known for their first 8 bit release, 'Sidewinder', and their follow ups 'The Maltese Chicken' and 'The Orb of Zaramer' are at long last releasing 'Sidewinder 68000' for the Atari ST in April. This classic arcade type game features its own screen editor to interact with the famous challenging gameplay of Sidewinder. Also due for release by Futureware in April are 'Intruder' and 'Time Zones' on the 8 bit. Futureware's second release for the Atari ST will come later in the year and will be a Gauntlet type arcade game with a hint of Boulder Dash!



Computer House, specialists in hardware development and design are soon to be releasing a number of innovative designs for the Atari 8 bit computers. The first of these being an interface which allows any ST compatible 3.5 inch disk drive to be connected to your 8-bit computer. Compatibility to the 1050 will be maintained as well as the possibility to store up to 1Mb on one disk the equivalent of eight 1050 drives.

Speeds will also be increased by 20 times allowing 48K to be loaded in less than a second. A new type of 80 column emulator will be available which is said to be better than any 80 column emulator seen to date and requires no software patching.

Atari's Search

Atari U.K. would like all user groups and special interest groups to contact them. They are compiling a list of such organisations, which will be forwarded to dealers and individuals who may be looking for assistance with computing on their Atari. Spokeswoman Fiona Mantell also promised that much closer links with the user groups was one of the purposes of the excercise, similar to that which has been happening in the USA of late. If you run a group or know of one, please inform Fiona at Atari Corp (UK) Ltd., Atari House, Railway Terrace, Slough, Berks, SL2 5BZ.

RICK HANSON

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MONITOR ON DISK

All the programs published in each issue of Monitor are now available pre recorded on disk for you No more need to spend frustrating hours of typing only to find the program won't run, and you are faced with the daunting task of bug hunting. The price is just £4 95 which includes postage and packing Send a cheque/postal order made payable to the 'U.K. Atari Computer Owners Club' to Monitor Magazine, P O Box 3, Rayleigh, Essex If you live in Europe add 50p, if outside Europe add £1 00. Please allow 14 days for delivery

Monitor Disk 8

Includes Quickplot a fast Graphics 8 Plot/Drawto handler Nightmare Reflections, an exceedingly frustrating adventure Matchbox, a concentration type memory game. Interrupts, 5 demo programs showing various uses of interrupts

Monitor Disk 9

Includes Keyo, our own typing checker (these are the codes you'll see at the beginning of each line on the listings we publish) Multiboot Bootbase, database program for 'Multiboot disks' Binload, binary loads from Basic Happytyper, automatic line numbering RAMdisk, for use with the 130XE Fast Fill, a speedy shape filling utility

Monitor Disk 10

Includes 3D Maze, escape from the maze in time if you can PCB Paranoia, destroy your enemies before they get you. Disk Jacket, useful program for making your own disk covers Chase, an excellent game, not to be missed

Monitor Disk 11

Includes Hexadecimal Code Generator, better presentation for your programs Cracking the Code, seven mini progs from the series RAM Talker, with a little bit of hardware and this program, you can hear your own voice (for 400/800 only) HomeFM, a useful utility for use with Home Filing Manager

Monitor Disk 12

Includes Another Boring Space Invaders Game, unlike its name, this game isn't boring at all Get Motorised, four programs for use with the circuits shown Mini-adventure, can you escape in one piece? Cracking the Code, Basic listing and assembler code for a drawing program Opening Out, five useful programs for disk users

Monitor Disk 13

Includes Demon, the Baron's demon has escaped and it's after you! Pageflipper, Basic and source code listings for page flipping techniques Cracking the Code, Basic and source code listings for player/missile movement. Data compression techniques for adventure writers Pengo, excellent Basic version of the well known Penguin game

Monitor Disk 14

Includes Deathzone, superb action game in which you must kill the alien pods and escape from the Deathzone Cracking the Code, display list program in Basic and source code Adventure Column, excellent sentence analyser program Motorway, novel fruit machine simulation but with a motorway theme

Monitor Disk 15

Includes Whist, the well known classic card game. Cracking the Code, modify display lists in Graphics modes 9, 10 or 11 Programs to enable you to Enter commands directly Turbo Basic superb program gives enhanced basic for XL/XE machines Guitar chord tutor, teach yourself to play the guitar

BACK ISSUES

Previous issues of Monitor are obtainable from the club for £1 plus 30p postage each They contain many interesting and informative articles, hints and tips, program listings, reviews and practical advice If you have missed out send for your copies of back issues today!! Please note that issues 1,2,3 4,5 & 7 are already sold out.

Number 6

Includes Microprinter and Versawriter picture dumper 80 column text demo Adventure column Crack the Code with addressing modes and binary sums Design for a Light Pen Fun with Art review Programs include Planetron and an RTTY listing for use with a short wave band radio, the 850 and a signal terminal unit (such as the Maplin TU1000)

Number 8

Includes Cracking the Code 2 new series, Opening Out and Starting from Basics Horizontal and vertical scrolling Mask of the Sun, Sorcerer, Conan, Alley Cat, Ghostbusters and Spy vs Spy all reviewed Programs include Quickplot, Nightmare Reflections and Matchbox.

Number 9

Includes RAMdisk for the 130XE Appraisal of the 130XE Introduction to MIDI Keyo typing checker Binary loads from Basic, Reviews of TopDOS, Homeword and Mr DO! Overview of FORTH Programs include. Fast shape filler, Multiboot index and Happy Typer



Number 10

Includes All about digitised pictures How disk files work Cracking the Code, Starting from Basics and What's MIDI all continue. Programs include Disk Jacket, PCB Paranoia and 3D Maze American Road Race, Kennedy Approach, Asylum, Red Moon and Wishbringer reviewed

Number 11

Includes RAM Talker for 400/800 Book reviews MIDI programs ST Hi-res Hat program Hexadecimal Code generator Reviews of Atariwriter Plus, Sidewinder Koronis Rift, Electraglide, Mercenary Fighter Pilot, Goonies and Alternate Reality Plus Starting from Basics and Cracking the Code

Number 12

Includes Add on circuits for various motors Disk file handling Matrices and Arrays explained Write your own adventure. Space Invaders program Reviews of Technicolour Dream, Eidolon and Action Biker ST reviews include DB Master One, Time Bandit and Menu Plus

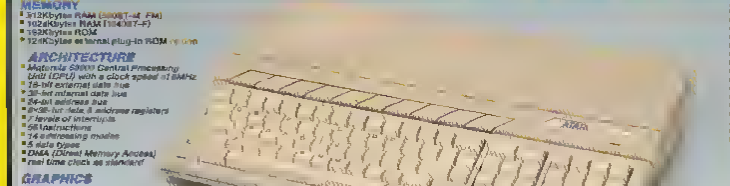
Number 13.

Includes Omnimon and Ultimon compared Data compression Megamax C and Lattice C evaluated Tamper the sound of your 8 bit Players and missiles explained Programs include Graphics 8 page flipper, Demon adventure game Reviews of Super 3D Plotter II, Planetarium Price of Magik, Last V8 and Nuclear Nick ST reviews include Cornerman, Cards and Major Motion

Number 14

Includes Display Lists Adventurers sentence analyser In depth look at Happy Revision 7 Graphics Modes Video digitiser mods for use with XL/XE machines Deathzone, a superb arcade game. Reviews of Crystal Raider, Molecule Man, Domain of the Undead, Laser Hawk, Rick Hanson, Colleen Music Compendium and Spellbreaker ST reviews include Music Studio, Starglider, TrimBase, Electronic Pool, Easy Record and Pinball Factory.

TECHNOLOGY SO ADVANCED ...



MEMORY
- 512Kbytes RAM (520ST-M/-FM)
- 1024Kbytes RAM (1040ST-F)
- 192Kbytes ROM
- 124Kbytes of format plug-in ROM cartridge

ARCHITECTURE
- Motorola 68000 Central Processing Unit (CPU) with a clock speed of 8MHz
- 16-bit external data bus
- 32-bit internal data bus
- 24-bit address bus
- 8x32-bit data & address registers
- 7 levels of interrupts
- 56 instructions
- 14 addressing modes
- 5 data types
- DMA (Direct Memory Access)
- real time clock as standard

GRAPHICS
- Tos hit-mapped display
- palette of 512 colours

Using Atari Monitors (no SC & SMs)
- 640x400 high resolution - monochrome
- 640x200 medium resolution - 4 colours
- 320x200 low resolution - 16 colours
- 80 column text display (640 x 400 mode)

Using Domestic TV (via 520)
- 320x200 low resolution - 16 colours
- 40 columns x 25 line text display

SOUND AND MUSIC
- 3 programmable sound channels
- 7 octaves of programmable sound - 720 notes
- programmable volume
- wave & dynamic envelope shaping
- programmable attack, decay, sustain, release
- Musical Instrument Digital Interface (MIDI)
- MIDI allows connection of synthesisers etc

BUILT IN
- 95 keyboard
- 3 button mouse
- free with 520ST-FM/1040ST-F
- mini slot built in (1 off socket)
- removable hard box easy mounting

INPUT/OUTPUT
- MIDI out (5 pin DIN) 31.25K baud
- MIDI in (5 pin DIN) 31.25K baud
- audio out 1.0V DC peak to peak, 10K ohm
- audio in 1.0V DC peak to peak, 10K ohm
- RGB monitor 1.7V DC, 75 ohm
- mono monitor 1.2V DC, 75 ohm
- mono high-persist scan rate 35.7KHz
- vertical scan rate 71.2KHz
- sync 5V DC (active low) 3.0K ohm
- modem/serial RS232C, 20 to 19,200 baud
- floppy disk 256 kbit/s
- hard disk 1.3 Mbit/s
- mouse standard Atari connector
- joystick standard Atari connector
- printer port 128K capacity
- RF output (520ST-FM) for TV use

OPERATING SYSTEM
- TOS with GEM environment in ROM
- hierarchical file structure with sub-directories and path names
- user interface via GEM, with pull-down/drop-down menus and windows
- multiple windows
- window sizing, repositioning and saving
- drop down menus (selected by mouse)
- GEM street theme interface

COMMUNICATIONS
- RS-232C as fist modem port
- serial parallel printer port
- MIDI port (also for networking use)
- VT52 terminal emulation

KEYBOARD
- standard QWERTY typewriter format
- 95 full stroke keys
- 10 function keys
- 18 key numeric keypad + cursor keys
- variable auto-repeat & key click response
- keyboard processor reduces CPU overhead

STANDARD SOFTWARE
- GEM desktop - TOS operating system
- ST BASIC interpreter language system

... IT'S AFFORDABLE

ONLY FROM SILICA

Finally, there's a personal computer that not only solves problems like other computers, but also solves the one problem that other computers have created. Atari obviously. Silica Shop are pleased to announce the ST range of interactive business computers from Atari. The ST was designed utilising the most recent breakthroughs in technology, to achieve economy, producing a personal computer that performs tasks with fewer parts. Which means it costs less to make and less to buy. The ST is supplied with GEM, which is built in power supplies and built in disk drives. The TOS operating system and GEM window environment are now ROM only - which are already installed in the ST keyboard. This enables instantly powerful booting when you switch on. Silica Shop are pleased to offer the complete Atari ST range. Our mail order department is situated in Sidcup and we have a retail outlet at Silica Computer Land House (Tottenham Court Rd. and Bethnal Green (Liverpool Street). We have eight years experience in Atari products. This brings: more than any other UK company, and the well established as the UK's No 1 Atari specialist. With a group turnover of over £5 million and a team of 15 staff we provide unbeatable service and support. We provide several facilities which you will find invaluable during your Atari computing life and most of these facilities are available ONLY FROM SILICA. We suggest that you read through what we have to offer, before you decide whether to purchase a Atari ST.

FREE STARTER KIT - Only From Silica

When you purchase any Atari ST keyboard, you will not only receive the best value for money computer on the market, but you will also receive the following from Atari Corporation as part of the package.

- BASIC Language Manual
- ST Owners Manual
- TOS/GEM on ROM
- Tutorial Disk

If you buy your ST from Silica Shop, you will also receive

- 1 MEG Upgrade - for your ground - breaking ST
- Microsoft - Word Processor

In addition, we at Silica would like to see you get off to a flying start with your new computer, so we have put together a special ST STARTER KIT which we are giving away FREE OF CHARGE with every ST computer purchased from Silica. This kit is available ONLY FROM SILICA and is aimed at providing users with a valuable introduction in the world of computing. We are continually upgrading the ST Starter Kit, which contains public domain and other licensed software as well as basic magazines that is recommended as necessary to fit in with the programs below for full details.

DEDICATED SERVICING - Only From Silica

At Silica Shop, we have a dedicated service department of five full time Atari trained technical staff. This team is totally dedicated to servicing Atari computer products. Their accumulated knowledge, skill and experience makes them second to none in this field. So if you are unfortunate enough to have your Atari develop a fault, you can be sure that it will be repaired promptly, expertly and reliably by one of the highest standards. A standard of servicing which we believe you will find ONLY FROM SILICA. In addition to providing full servicing facilities for Atari ST computers (both in and out of warranty), our team is given ample time to offer helpful and specialist answers to ST customers.

1Mb RAM UPGRADE. Our upgrade on the standard Atari 520ST-M or 520ST-FM keyboard will increase the memory from 512K to a massive 1024K. It has a full 1 year warranty and is available from Silica at the very low fitted price of only £70 (inc VAT).

TV MODULATOR UPGRADE. Silica can upgrade the 520ST-M to include a TV modulator so that you can then use it with your TV set. This is an internal upgrade and does not involve any unsightly external boxes that can clutter up your desk. The Atari TV modulator will be fitted by our technicians and will then only cost £48 (inc VAT). The upgrade is also available for early 520ST computers in the stock phase.

THE FULL STOCK RANGE - Only From Silica

We aim to keep stocks of all Atari related products and our warehouse carries a stock in excess of £1 million. We invest heavily to have a stock position that is second to none in the UK and you will find that we have ample stocks of many of our competitors. Unlike dealers who may only stock selected titles, we have the full range in addition we carry a complete line of books and other publications about the Atari ST. A range as wide as ours is something you will find is available ONLY FROM SILICA.

AFTER SALES SUPPORT - Only From Silica

First assured that when you buy your ST from Silica Shop, you will be fully supported. Our free mail order support service is available to ensure that you get the best from your ST. Keep up to date with what's happening in the Atari market. And in addition to our sales staff at the end of a telephone line to help with technical queries or after sales problems, our team of technical consultants are available to offer their expertise to help with any difficulties that you may have. Unlike dealers, we do not expect our technical staff to be proficient in all computers, we employ technicians who are dedicated to Atari computers. This means that you benefit from their specialist knowledge. Add to this the fact that we have both the stock and the systems expertly dedicated to providing after sales service on Atari ST computers, we are confident that our users enjoy an exceptionally high level of support. This can be received ONLY FROM SILICA.

FREE CATALOGUES - Only From Silica

At Silica Shop, we recognise that serious users require an in-depth information service which is why we run the newsletter and price lists to our ST owners. These are up to 48 pages long and are crammed with technical data, hints and tips, special offers and product specifications. If you have already purchased an ST and would like to have your name added to our mailing list, please complete the coupon & return it to us. The information service is available ONLY FROM SILICA.

FREE OVERNIGHT DELIVERY - From Silica

Most orders are processed through our computer within 24 hours of receiving them. Most hardware orders are sent by the overnight METRO courier service FREE OF CHARGE to customers within the UK. This means no hassle, no additional delay and less risk of damage in transit.

PRICE MATCH - Only From Silica

We hope that the fact mentioned in our low prices, FREE UK delivery service, FREE Starter Kit and FREE after sales support will be enough to make you buy your Atari equipment from Silica Shop. However, we realise that sometimes it's you want to purchase, and you find one of our competitors offering it at a lower price. Then please contact our sales department by telephone or in writing, with their competitor's name, address and telephone number. If any competitor has the goods in stock, we will normally match the offer (on a same price, same package basis) and will then offer you with our normal free delivery. We realise that we're not the only company who will match a competitor's price. However, if you come to us for a price match you will also be entitled to our after sales service, including free newsletters and special mail shots. This means that you will continue to receive details of selected Atari products, and will receive ONLY FROM SILICA the best deals with you. So go anywhere else to see Atari products. So after all, Silica - the UK's No1 Atari Specialist.

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LONDON **01-580 4839**
Lion House (1st floor) 227 Tottenham Court Rd London W1

LONDON **01-629 1234 ext 3677**
Selfridges (1st floor) Oxford Street London W1A 1AB

520ST-M

The first time ever Atari Computers are reflected in the price of the 520ST-M keyboard, which is a mere £299 (inc VAT). The rest of the ST comes with 512K RAM as well as a mouse and a lead for direct connection to any domestic TV. The price does not include a modulator. In addition, when you buy your 520ST-M from Silica, you will also receive the FREE 5th or ST Starter Kit. During 1987, many software houses will be producing games software on ROM cartridges which will just plug directly into the cartridge slot on the 520ST-M keyboard, giving instant loading at least the expense of purchasing a disk drive. With the enormous power of the ST, you can expect some exciting titles to be produced making this the ultimate games machine! If your requirements for a computer do not stretch to the need for disk drives, then the 520ST-M could be the ST you are looking for. Upgrades are available to convert the ST to one of the other models and with this entry level specification of 512K memory and one internal 3½" disk drive, the 520ST-M can't be beaten for value. If you wish to take advantage of the massive range of ST software available for the ST range, you will need to purchase a disk drive as a minimum. Silica Shop can offer you the 1 Meg upgrade for the 520ST-M keyboard, which includes the Atari SF354 3½" disk drive for only £70 (inc VAT). Alternatively, you may wish to purchase the 520ST-M keyboard and a monitor. Both the Atari SM124 high resolution monochrome monitor and the Atari SC1224 colour monitor are available at the same time as the keyboard, for the ultimate in ST computing. The model is the ideal introduction to the ST family and is not only powerful, but compact. It is priced at only £399 (inc VAT). It does not include a mouse or TV modulator, but is supplied with a free 512K RAM upgrade, which is worth £70 (inc VAT). Also supplied with the 520ST-M is a free mouse mat and a free copy of Atari Logo, a new language for children. Silica Shop can offer you the 520ST-M keyboard with a free SM124 monochrome monitor for only £499 (inc VAT). Alternatively, you may wish to purchase the 520ST-M keyboard with a free SC1224 colour monitor for only £599 (inc VAT). Please note that the 520ST-M keyboard does not include a TV modulator, but this can be purchased separately.

£259

520ST-FM

The 520ST-FM with 512K RAM and free mouse represents a further breakthrough by Atari Corporation in the world of high power, low cost personal computing. The model is the ideal introduction to the ST family and is not only powerful, but compact. It is priced at only £399 (inc VAT). The model is supplied with built in 3½" disk drive and with a whole new generation of computer enthusiasts. When you consider that all it cost you is the FREE Silica ST Starter Kit (see paragraph on the left). The 520ST-FM is the ideal way to get started in the world of computing. All that is required is a ½ megabyte disk drive for internal expansion and a printer. Silica Shop have a wide range of printers available for the ST. The Atari SMP804 dot matrix printer is available for only £199 (inc VAT). Alternatively, you may wish to purchase a printer interface which is available for only £29.95 (inc VAT). This enables you to connect a number of printers which are not designed for the ST, to the ST. The printer interface is a plug in unit which requires no external power supply. Silica Shop can supply a cable to connect the printer interface to the ST and a printer lead for the printer of your choice. Please state your requirements when ordering. Silica Shop can also supply a range of printer accessories, including printer stands, printer paper and ribbons. Please contact us for more details.

£399

1040ST-F

For the businessman and the more serious home user Atari have their most powerful model yet - the 1040ST-F with 1MEG RAM. This is the most powerful model and its introduction into a business environment as a stand-alone system, or can support a mainframe computer as a terminal. The 1040ST-F not only features a much increased memory as the 520ST-FM, but also includes a more powerful built-in disk drive. The new disk drive on the 1040ST-F is over three times more powerful than the extra memory facility of the 1040ST-F makes it ideal for applications such as desk top publishing or spreadsheets. Like the 520ST-FM, the 1040ST-F has a mains transformer built into the computer to give a compact and stylish unit with only one mains lead. The 1040ST-F is also supplied from Silica Shop with a free software package and ST STARTER KIT. In the USA, the 1040ST-F has been sold with a TV modulator as the 520ST-FM. However for the UK market, Atari have decided to supply the 1040ST-F complete with business users mind and it does not currently include an RF modulator. This means that you cannot use it with a domestic TV (Silica Shop can offer a modulator upgrade for only £49). The 1040ST-F keyboard costs only £599 (inc VAT) and unlike a modulator, upgrade is fitted free of charge by Atari or third party dealers. There are three Atari monitors available and the prices for the 1040 with these monitors are as follows:

1040ST-F Keyboard + Mono Monitor	£899 (inc VAT)
1040ST-F Keyboard + High res mono monitor	£999 (inc VAT)
1040ST-F Keyboard + Med res colour monitor	£999 (inc VAT)

The 1040ST-F comes with a mouse controller and includes Mirrors Flight Sim. There is 1Meg of RAM and a built in disk drive and all these items are built into the keyboard to give a compact and stylish unit, with only one mains lead.

£599

ATARI ST

To: Silica Shop Ltd, Dept ATCOC 0387, 1-4 The Mews, Hatherley Road, Sidcup, Kent, DA14 4DX

PLEASE SEND ME FREE LITERATURE ON THE ATARI ST

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If so, which one do you own?

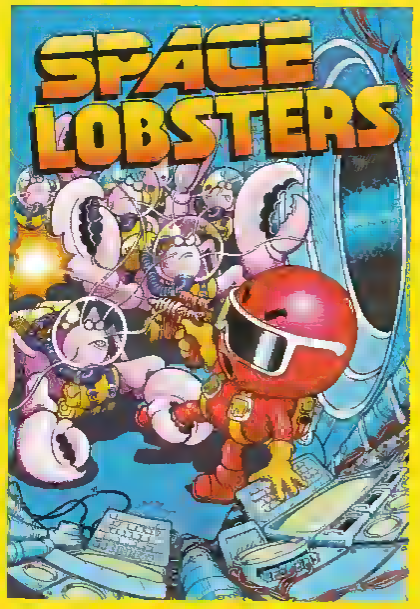
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